

# Tab 1



US007107338B1

(12) **United States Patent**  
Nareddy et al.

(10) **Patent No.:** US 7,107,338 B1  
(45) **Date of Patent:** \*Sep. 12, 2006

(54) **PARSING NAVIGATION INFORMATION TO IDENTIFY INTERACTIONS BASED ON THE TIMES OF THEIR OCCURRENCES**

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(75) **Inventors:** Krishnamohan Nareddy, Redmond, WA (US); Radha Krishna Uppala, Redmond, WA (US)

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(73) **Assignee:** Revenue Science, Inc., Bellevue, WA (US)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1018 days.

This patent is subject to a terminal disclaimer.

U.S. Appl. No. 10/007,646, filed Dec. 2001, Basko, Roman et al.\*  
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(21) **Appl. No.:** 10/005,183

*Primary Examiner*—Saleh Najjar

*Assistant Examiner*—V. Korobov

(22) **Filed:** Dec. 5, 2001

(74) *Attorney, Agent, or Firm*—Perkins Coie LLP

(51) **Int. Cl.**  
*G06F 15/173* (2006.01)

#### (57) **ABSTRACT**

(52) **U.S. Cl.** ..... 709/224; 709/203; 709/218; 709/223; 707/6

A method, system and computer-readable medium for analyzing interaction or usage data, such as for customers, is described. Various data parsing information may be defined and used as part of the analysis, such as by using customer-specific information to identify various occurrences of interest. For example, the parser component can use data defining customer-specific categories of content set items and customer-specific types of events of interest. Such high-level types of occurrences can be specified in a variety of ways, such as by using a combination of a logical web site, one or more URLs corresponding to web pages, and/or one or more query strings. In addition, in order to associate the appropriate data parsing information with data to be processed, the data parsing information can also include version information that specifies when it is applicable. The data parsing information may also map actual web sites to logical sites.

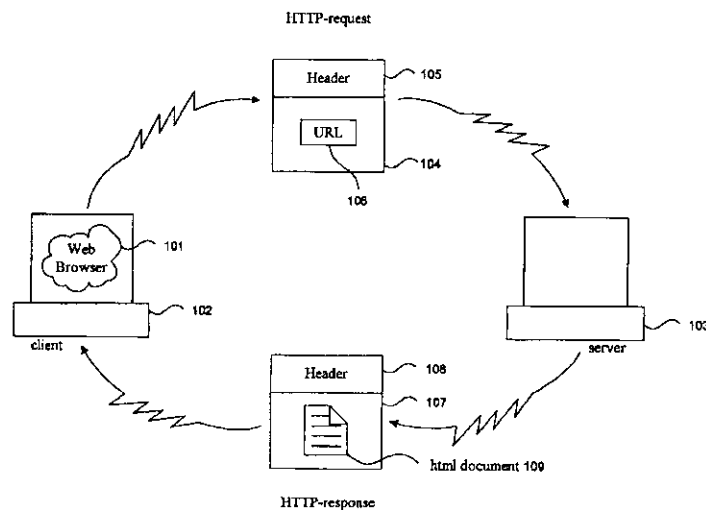
(58) **Field of Classification Search** ..... 709/223, 709/224, 203, 200, 202, 229, 217–219, 245; 715/853, 854; 707/1, 3, 6, 100  
See application file for complete search history.

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**44 Claims, 60 Drawing Sheets**



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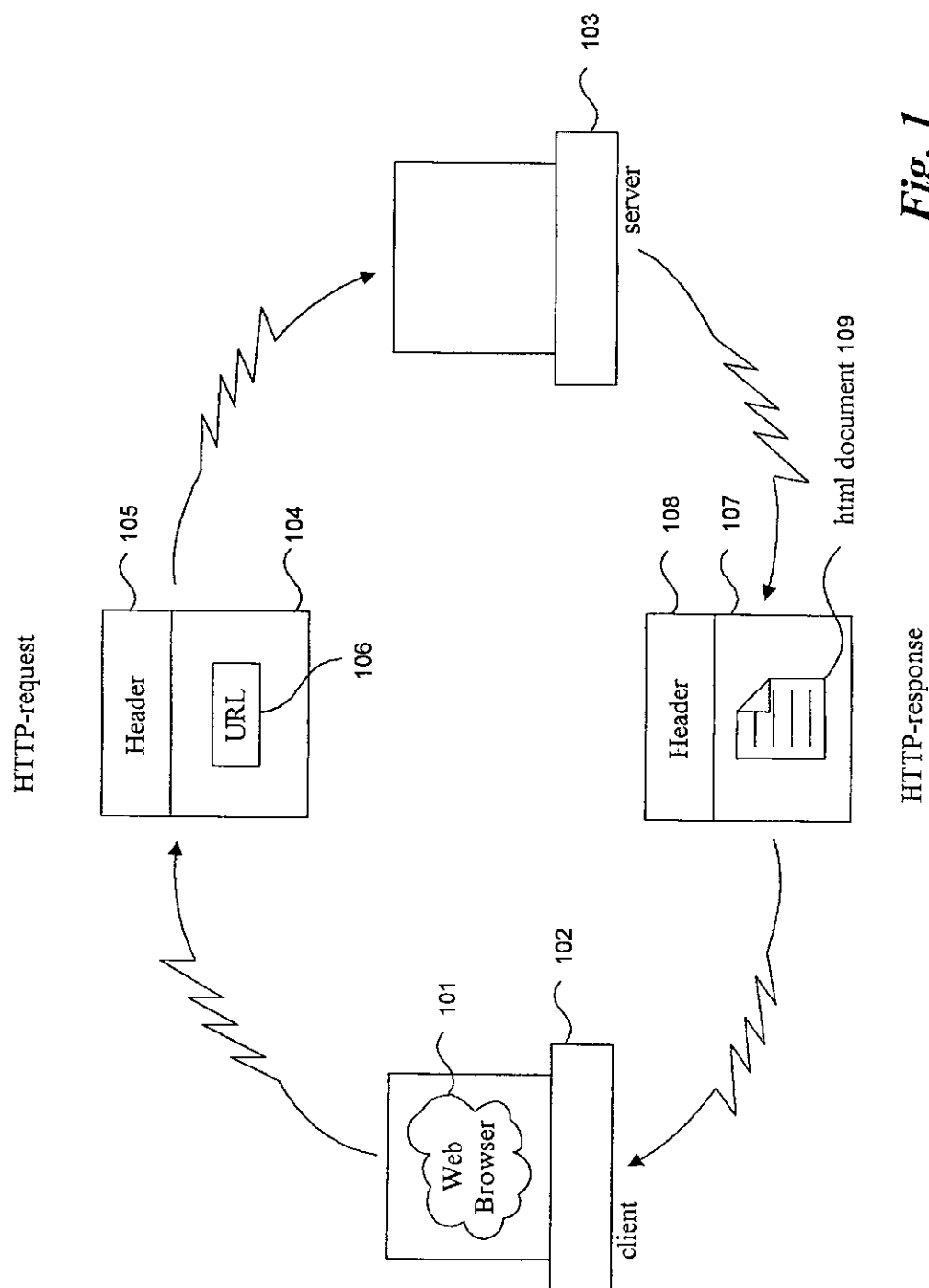
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**Fig. 1**

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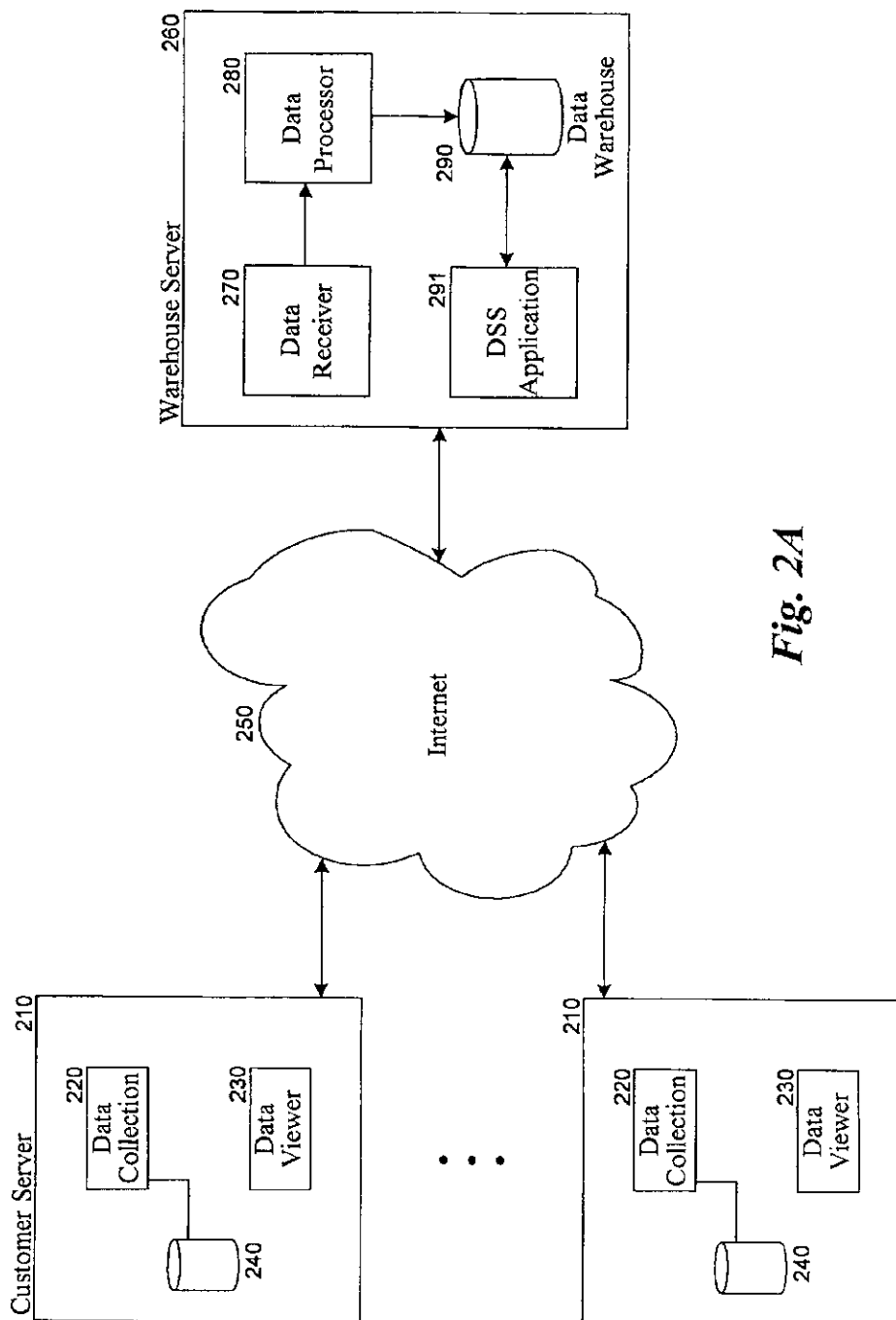


Fig. 2A

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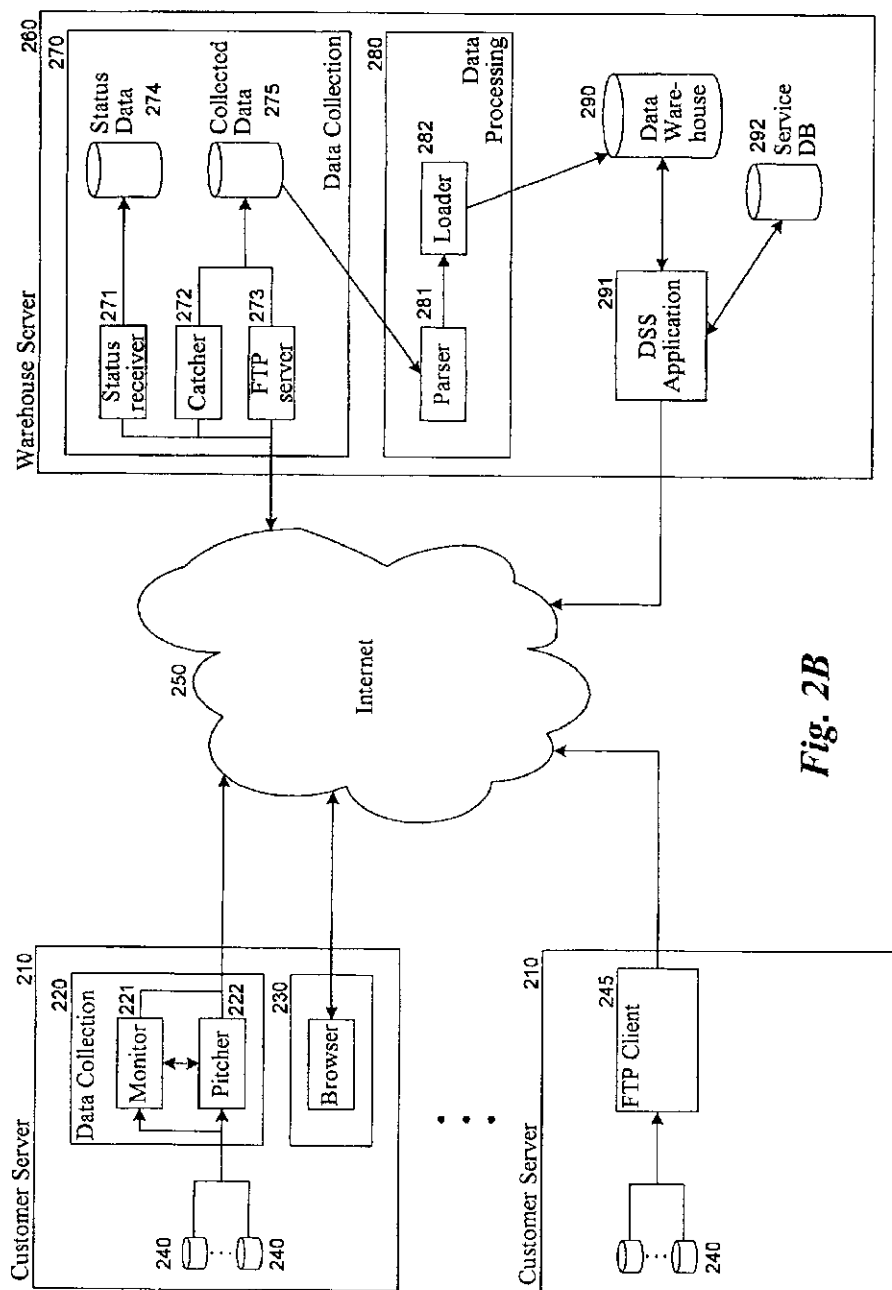


Fig. 2B

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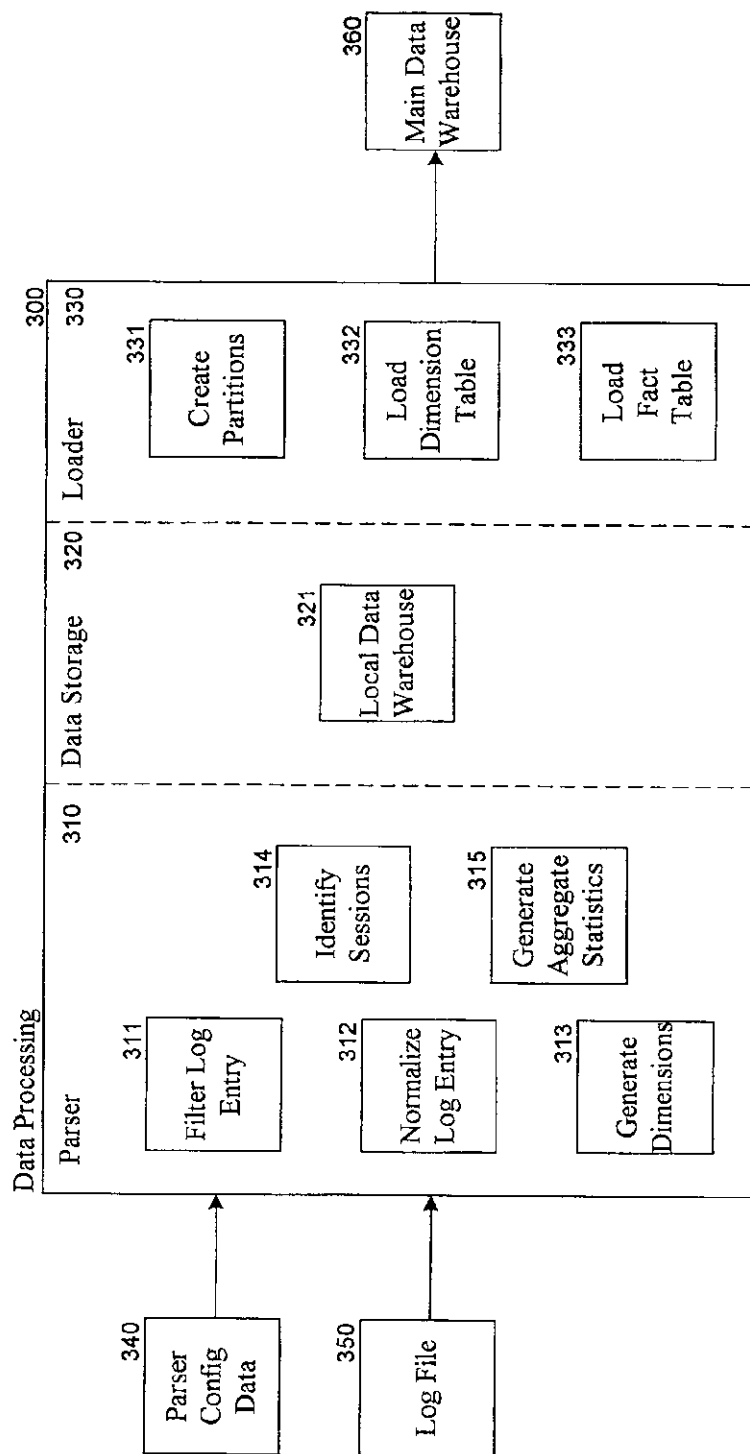


Fig. 3

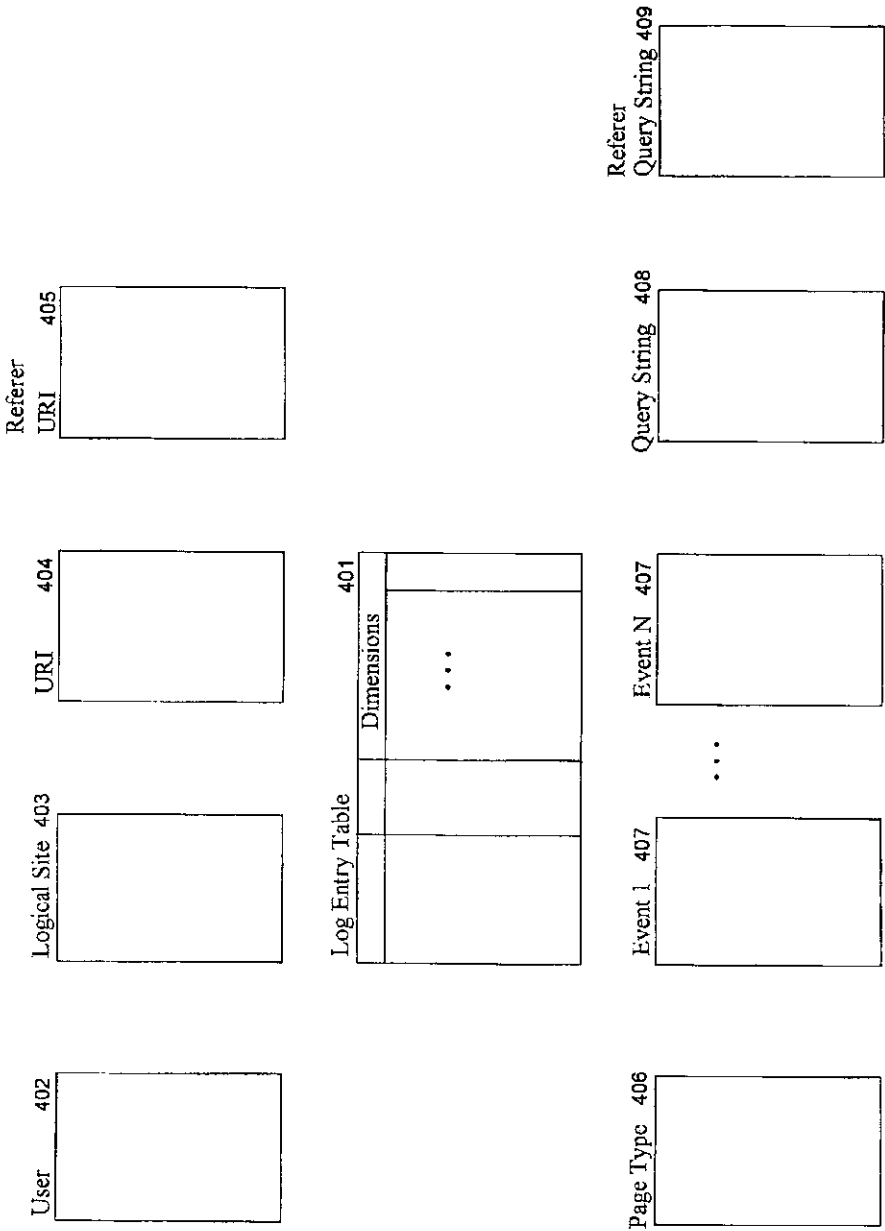


Fig. 4

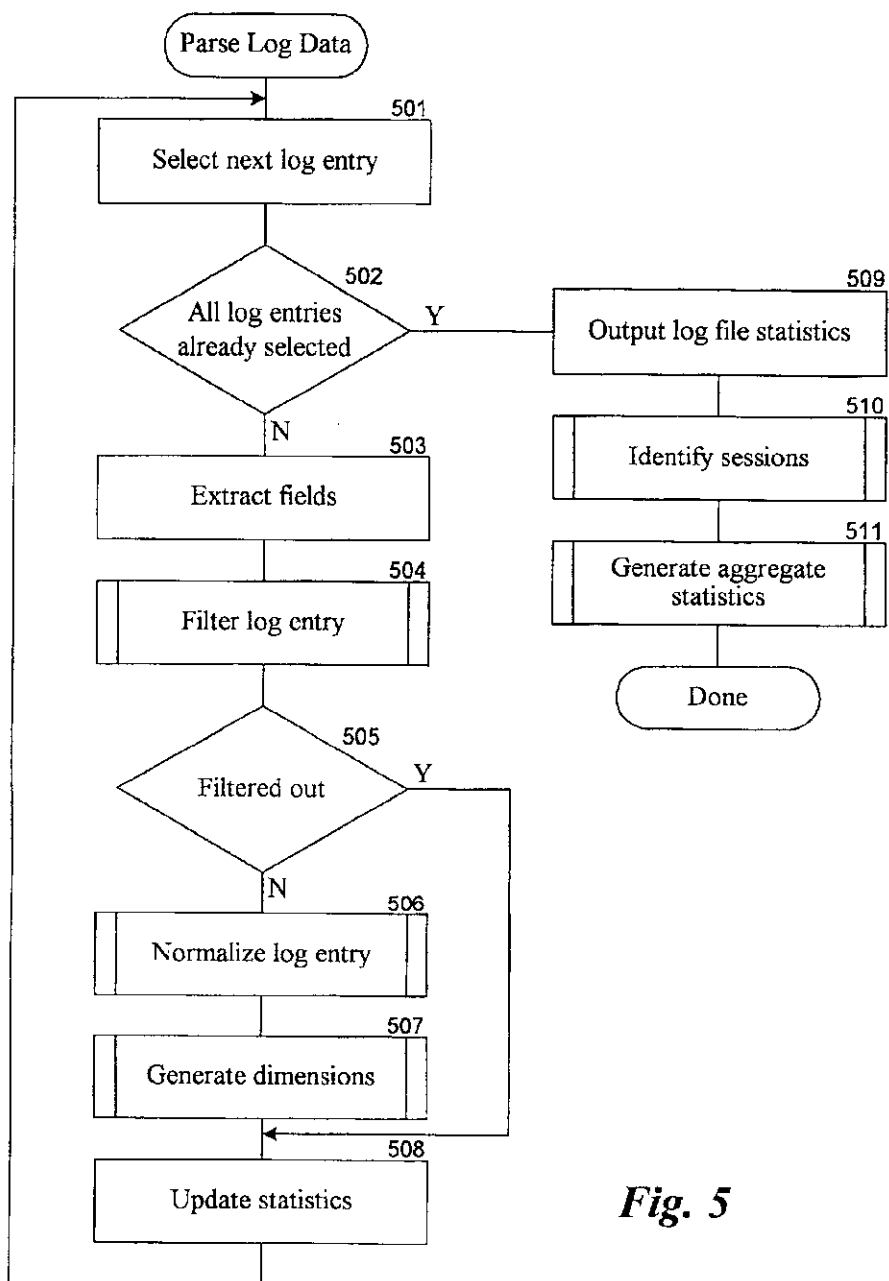


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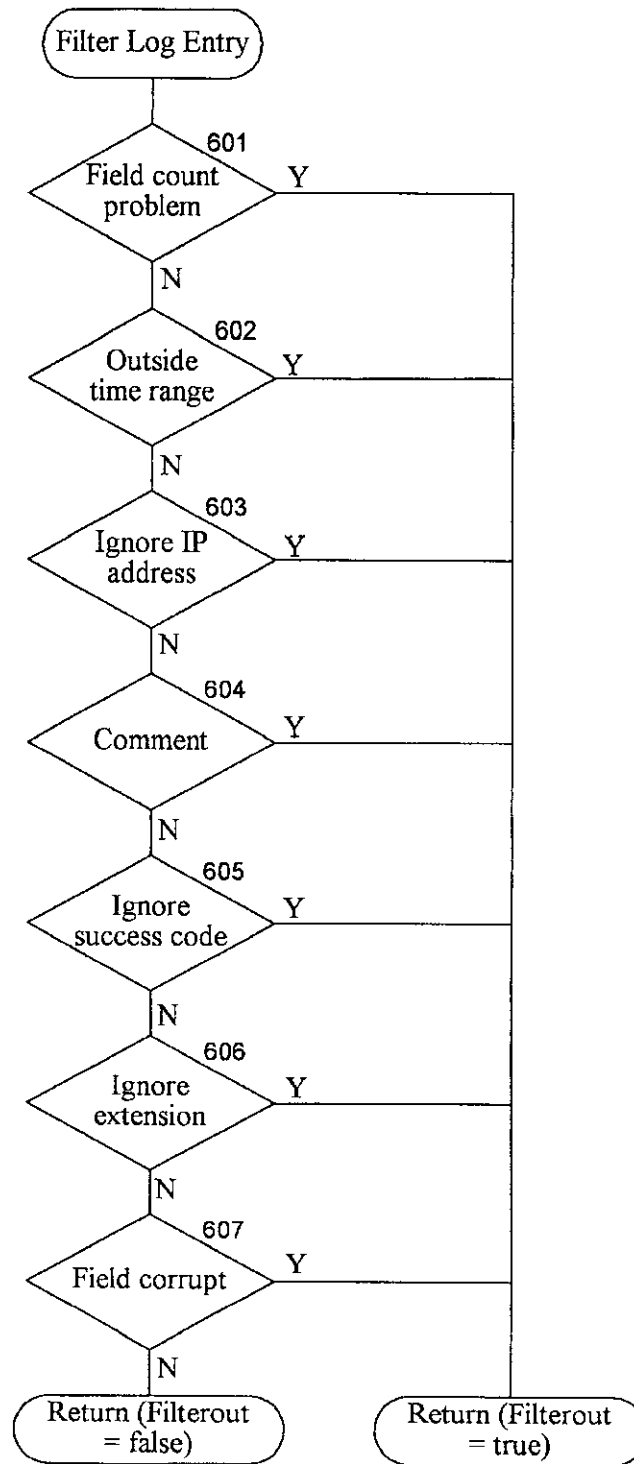


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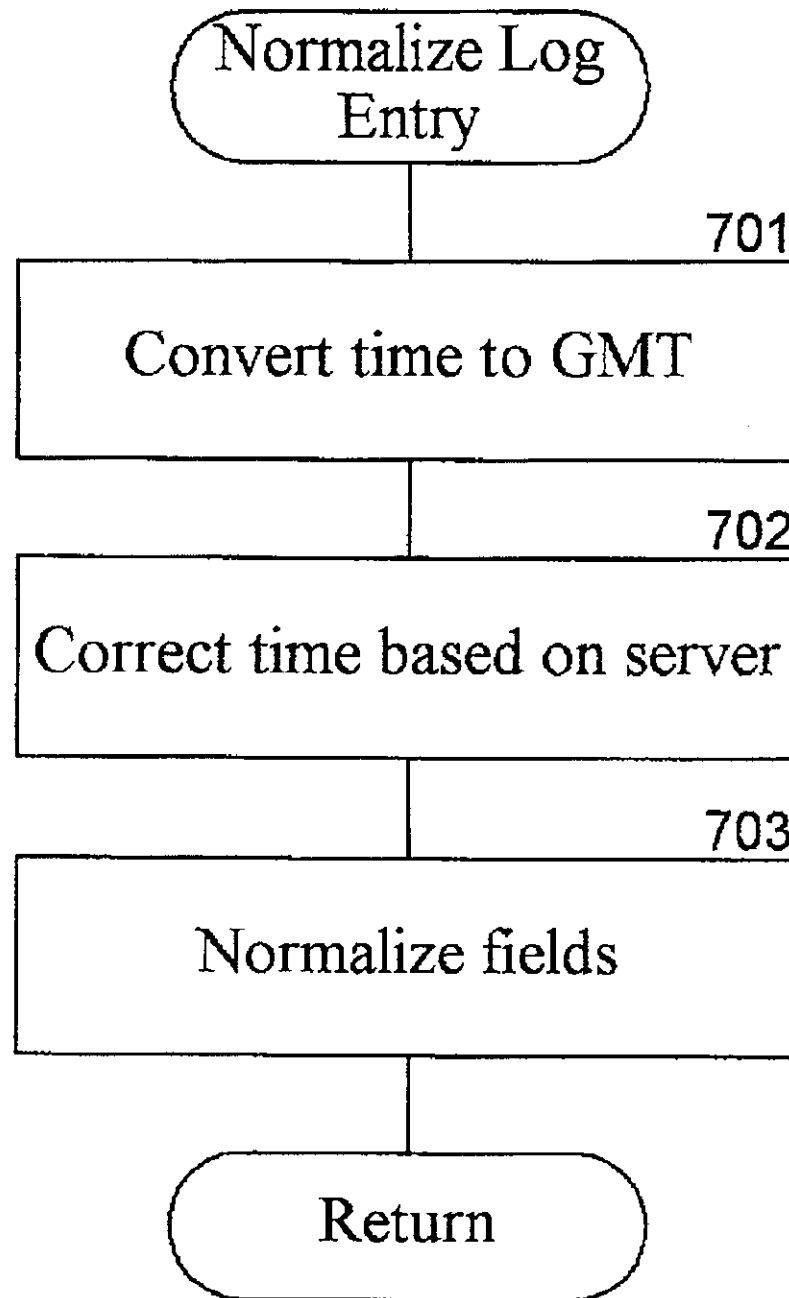
**Fig. 6**

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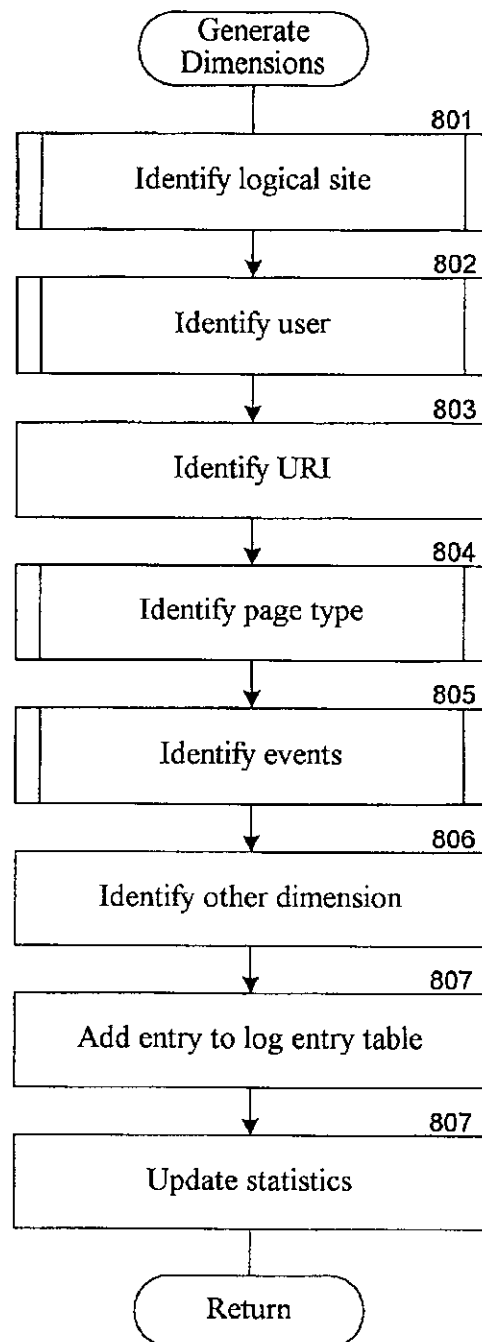
***Fig. 7***

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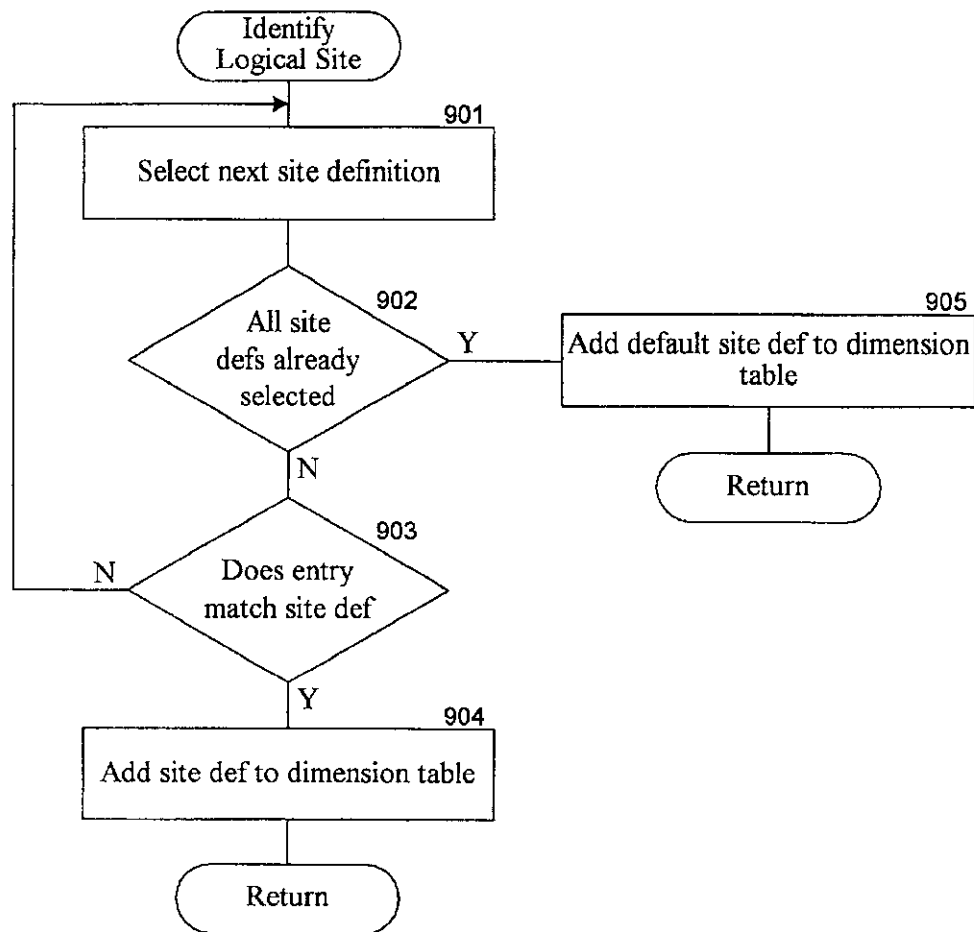
**Fig. 8**

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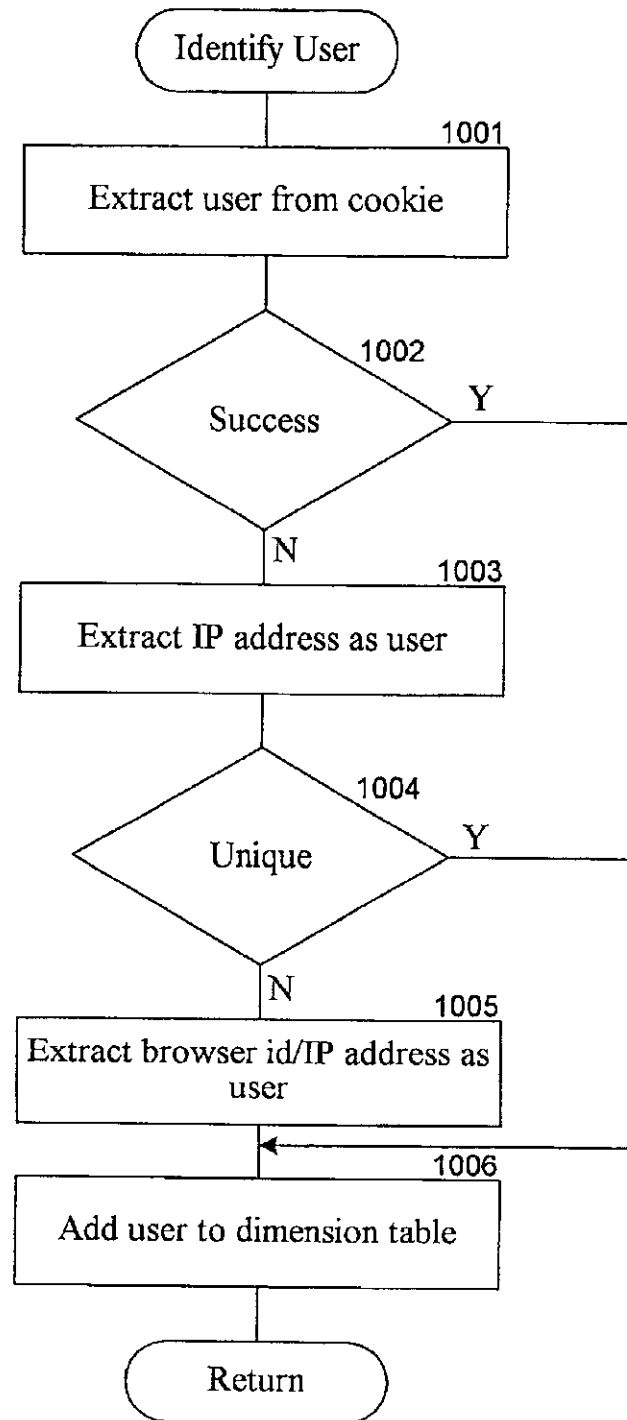
**Fig. 9**

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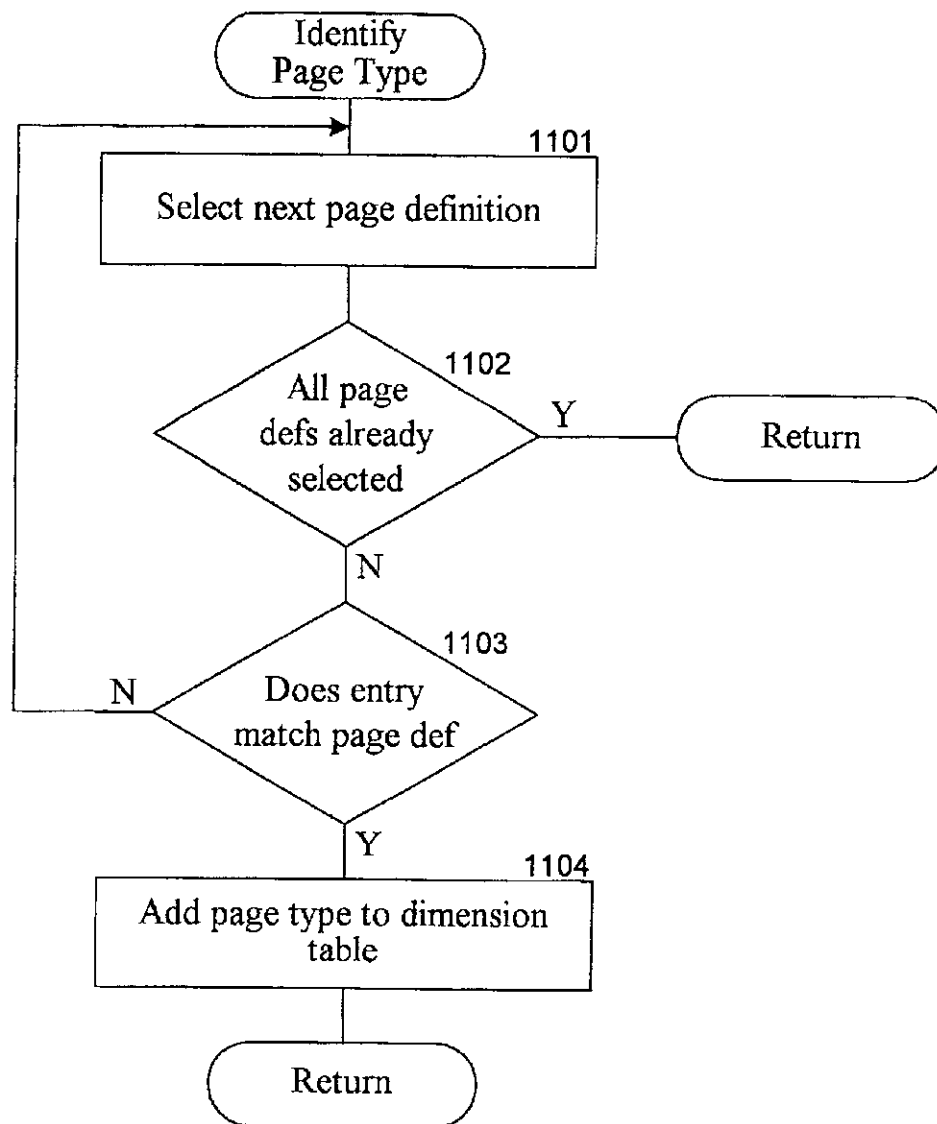
*Fig. 10*

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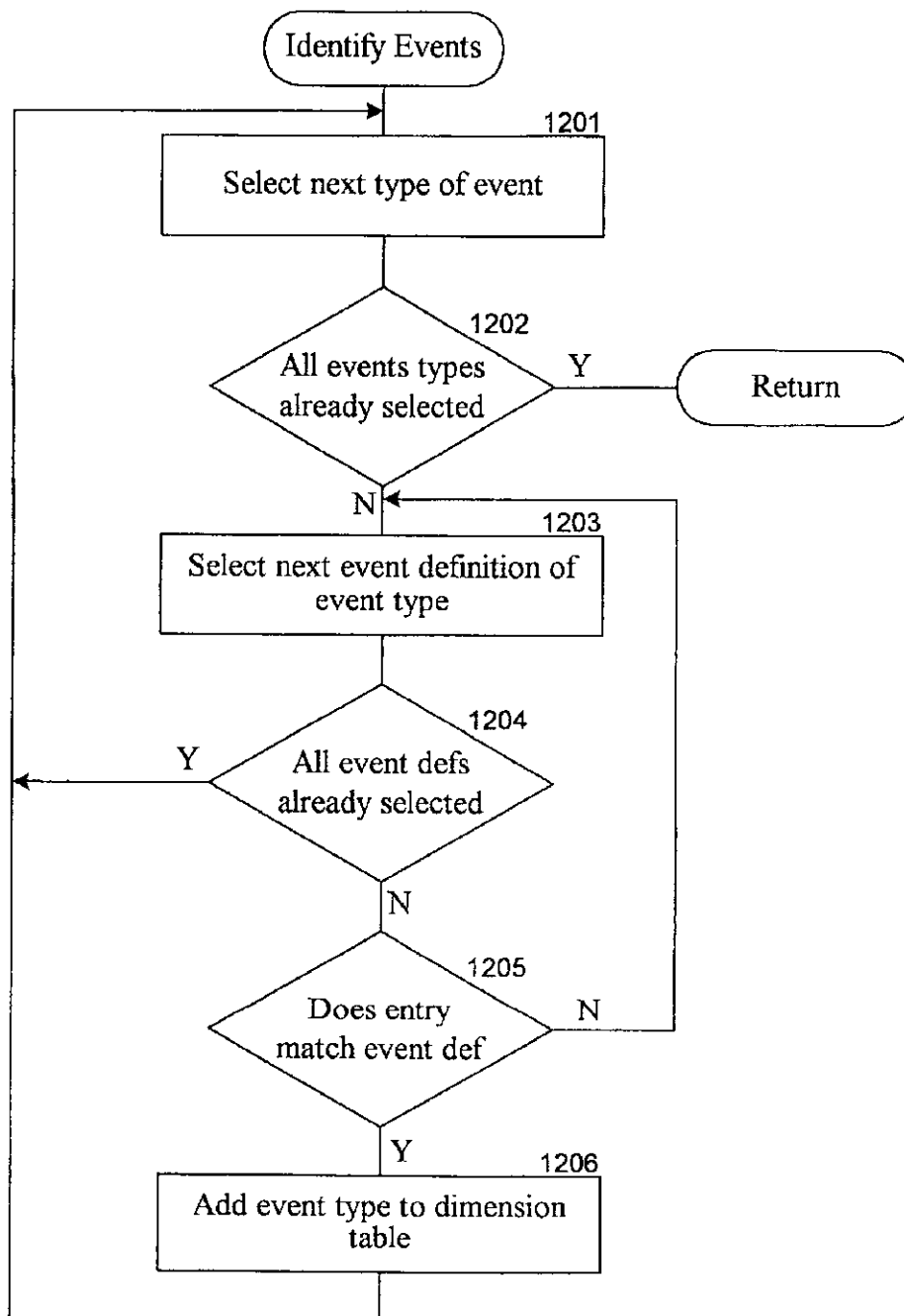
***Fig. 11***

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**Fig. 12**

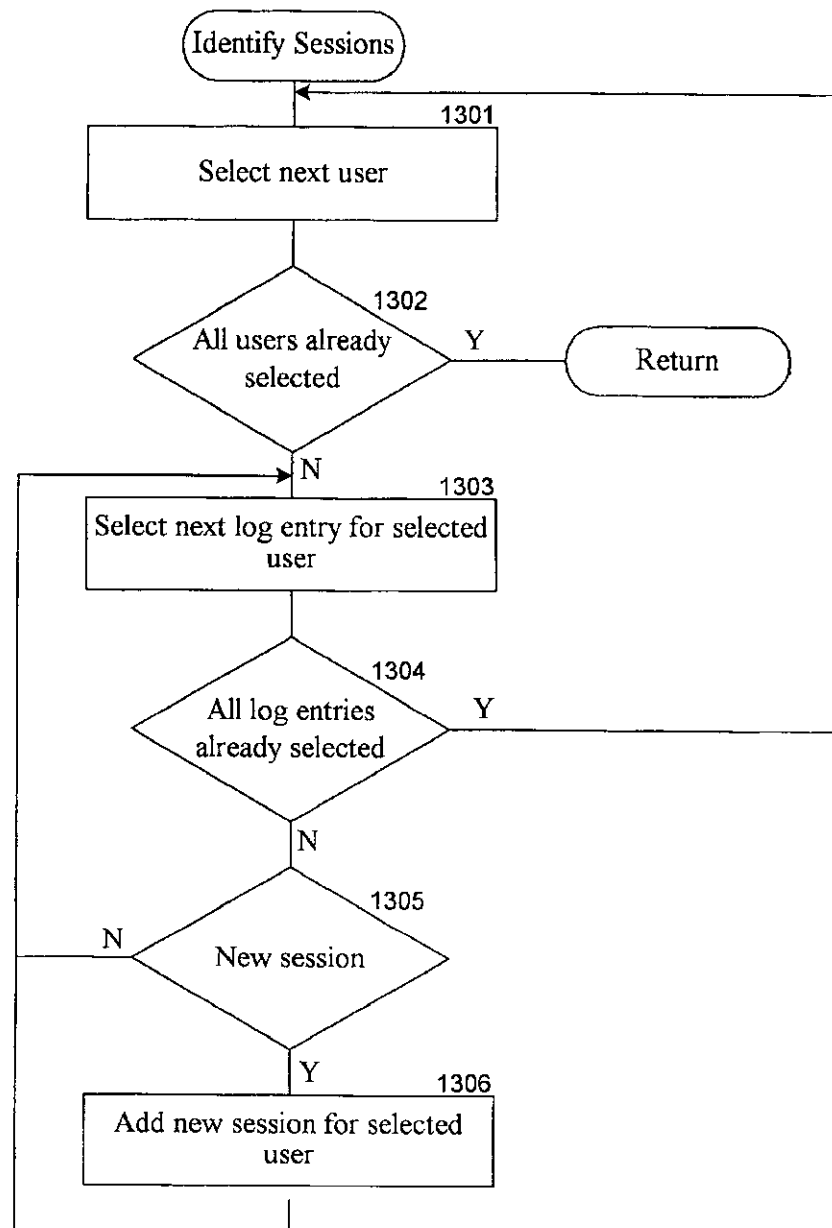


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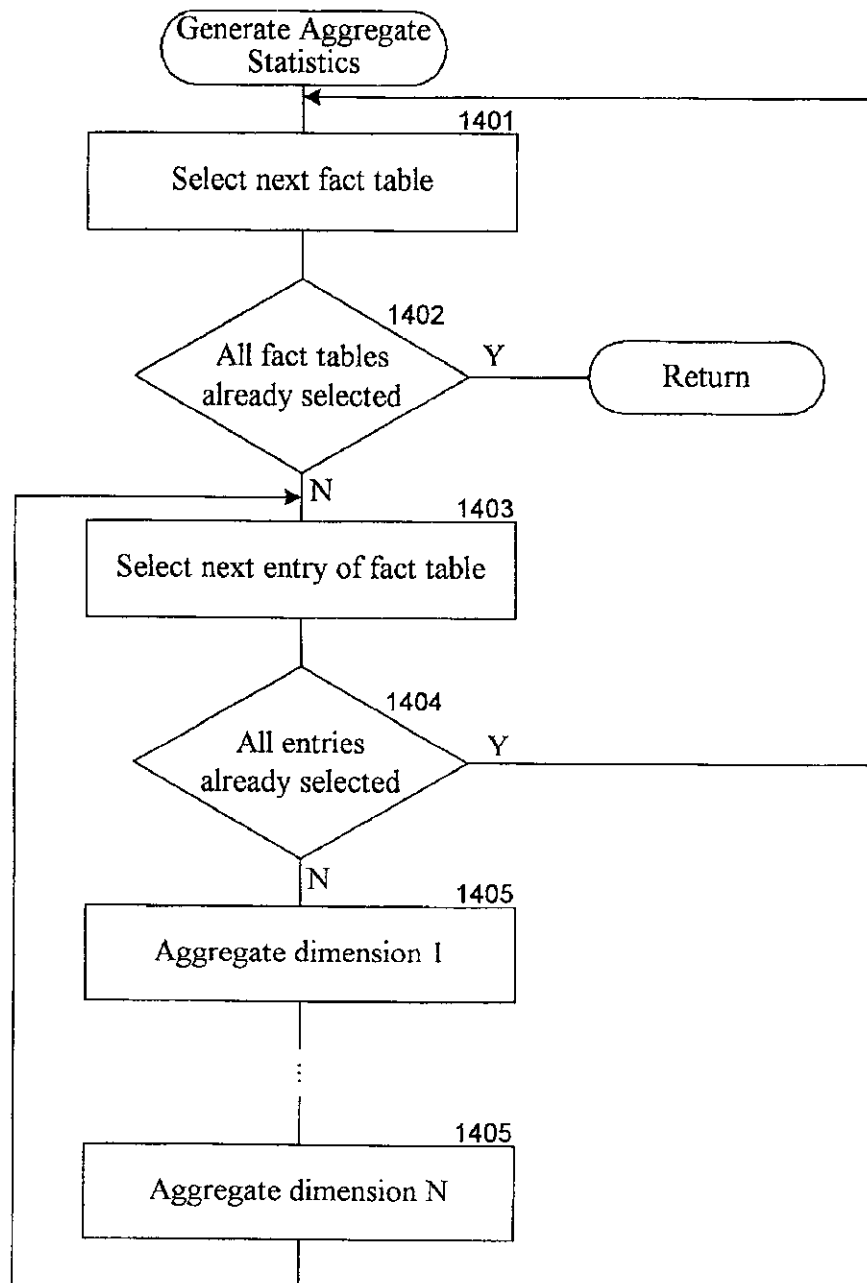
*Fig. 13*

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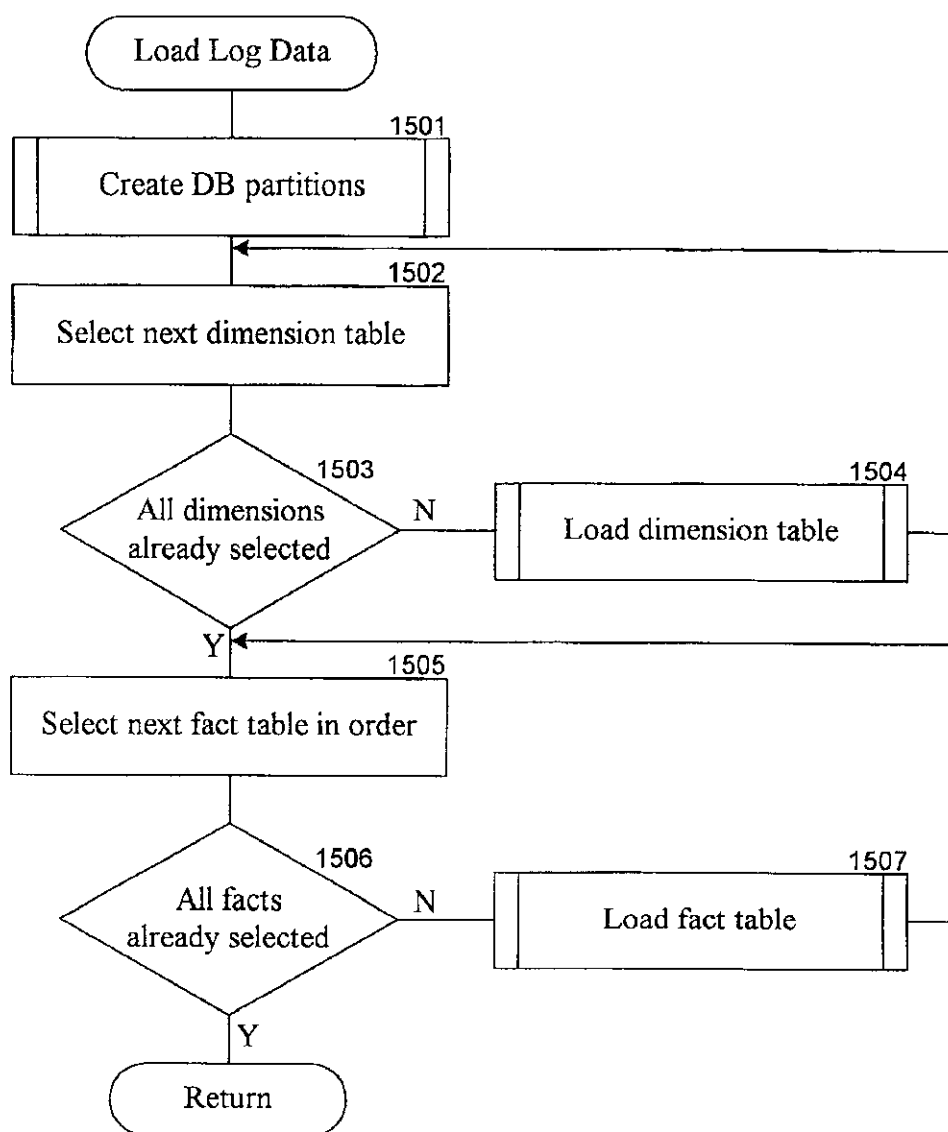
**Fig. 14**

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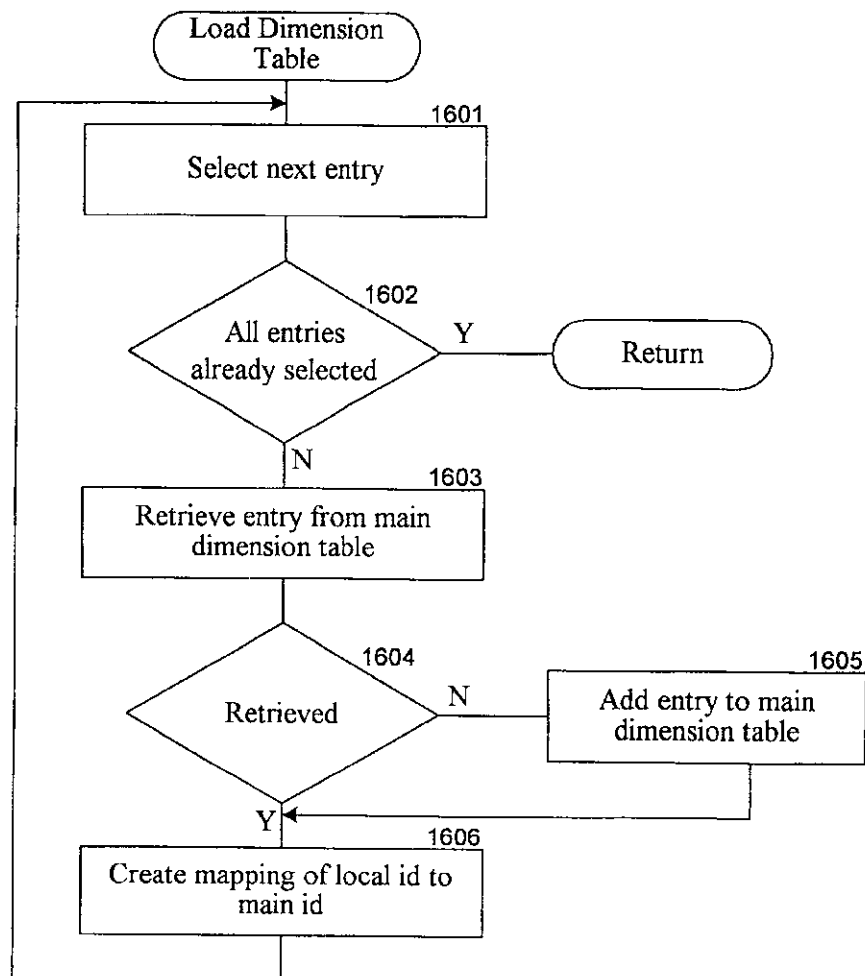
*Fig. 15*

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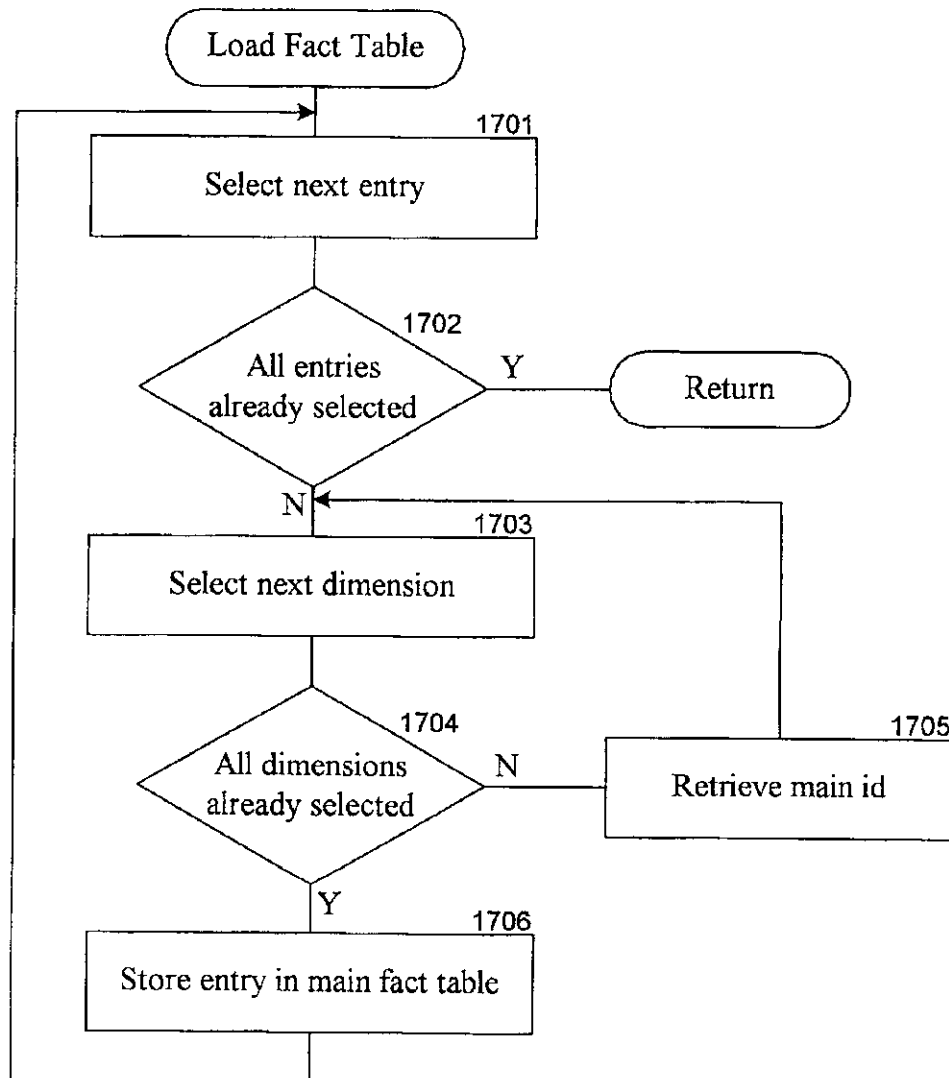
*Fig. 16*

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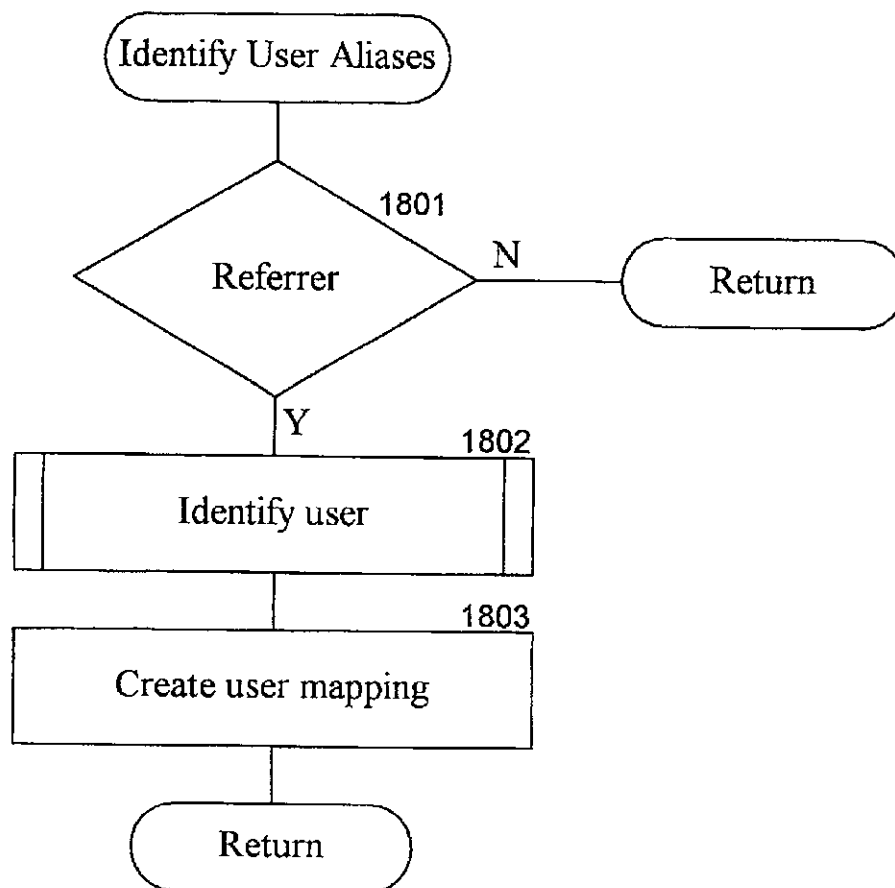
**Fig. 17**

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***Fig. 18***

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1900 Welcome to digiMine

**digiMine**  
Powering your data  
the business advantage

1901 1903 1905 1907 1909

MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

## Unlock the Power of Your Data

1910

digiMine will uncover valuable business intelligence and enable you to take immediate action by delivering advanced analytics and personalized content.

digiMine provides you with intuitive reports that have key metrics on customer behavior, site performance, product sales, content conversion, marketing campaign effectiveness, response to banner ads, customer engagement, identification and much, much more. digiMine's data mining services also deliver predictive applications that give you the ability to personalize web content, cross-sell and up-sell.

Not only that, but when you're a provider (ASP) model allows us to provide you with an affordable solution that is easy to deploy and easy to use.

[Learn more](#)

1904

To request additional information about digiMine, please fill out our

1909

Latest Events

digiMine Wins  
Upside  
Preview  
Fall's

Award at  
Internet  
World?

See why  
data warehousing and data  
mining solutions for all  
businesses.

Can you have a passion for  
technology, customer  
service and a desire to sell  
If so, check out our current

<http://www.digimine.com/>

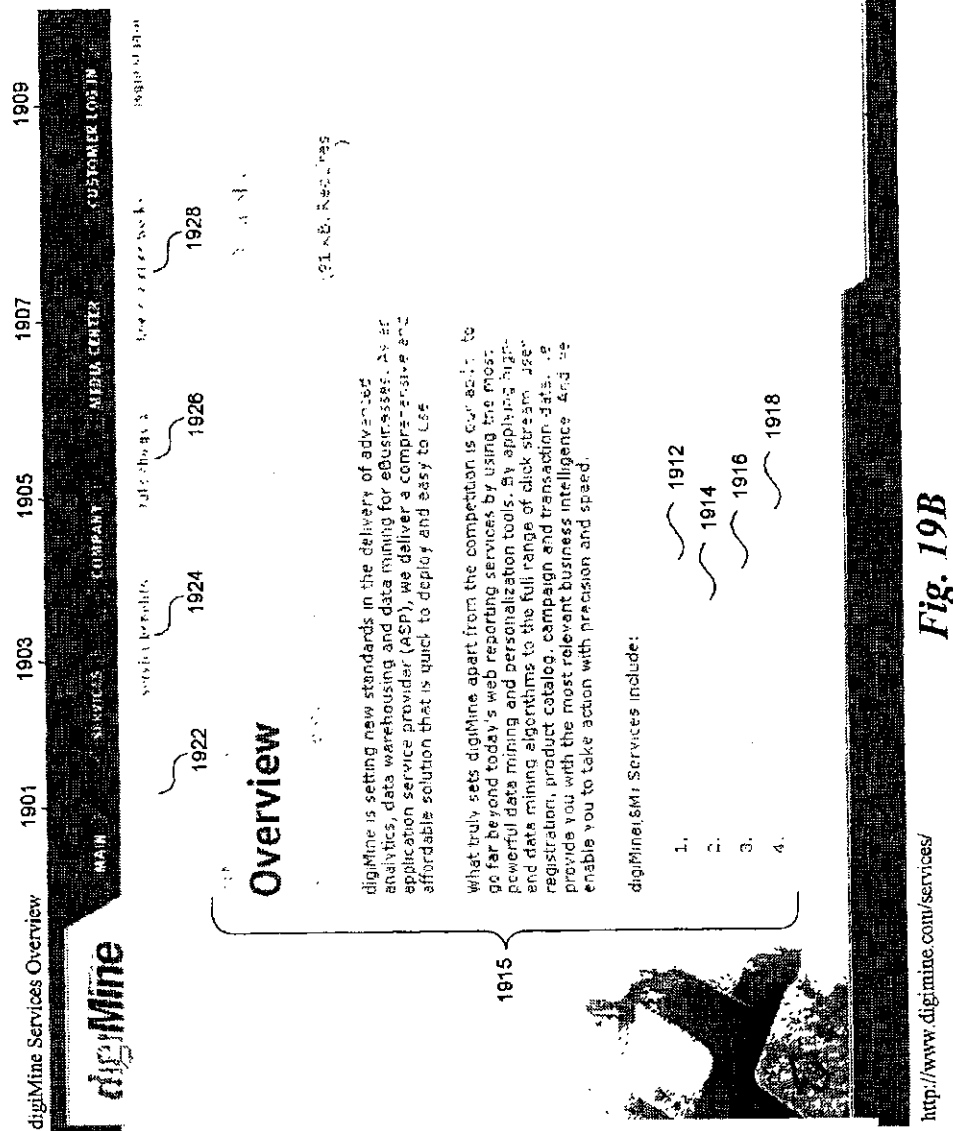
**Fig. 19A**

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## Overview

Building a comprehensive data warehouse is the first fundamental step in creating strong analytics and personalization. digiMine will take your data from multiple sources including click stream, transaction, product, campaign and user profiles to create a robust data asset.

Our scalable data warehouseing infrastructure enables us to build large warehouses that are capable of holding data for the most data intensive businesses, even those as big as the Media Matrix top 50.

### 1 digiMine Warehouseing Services

1914

<http://www.digimine.com/services/warehouseing.htm>

Fig. 19C

1920

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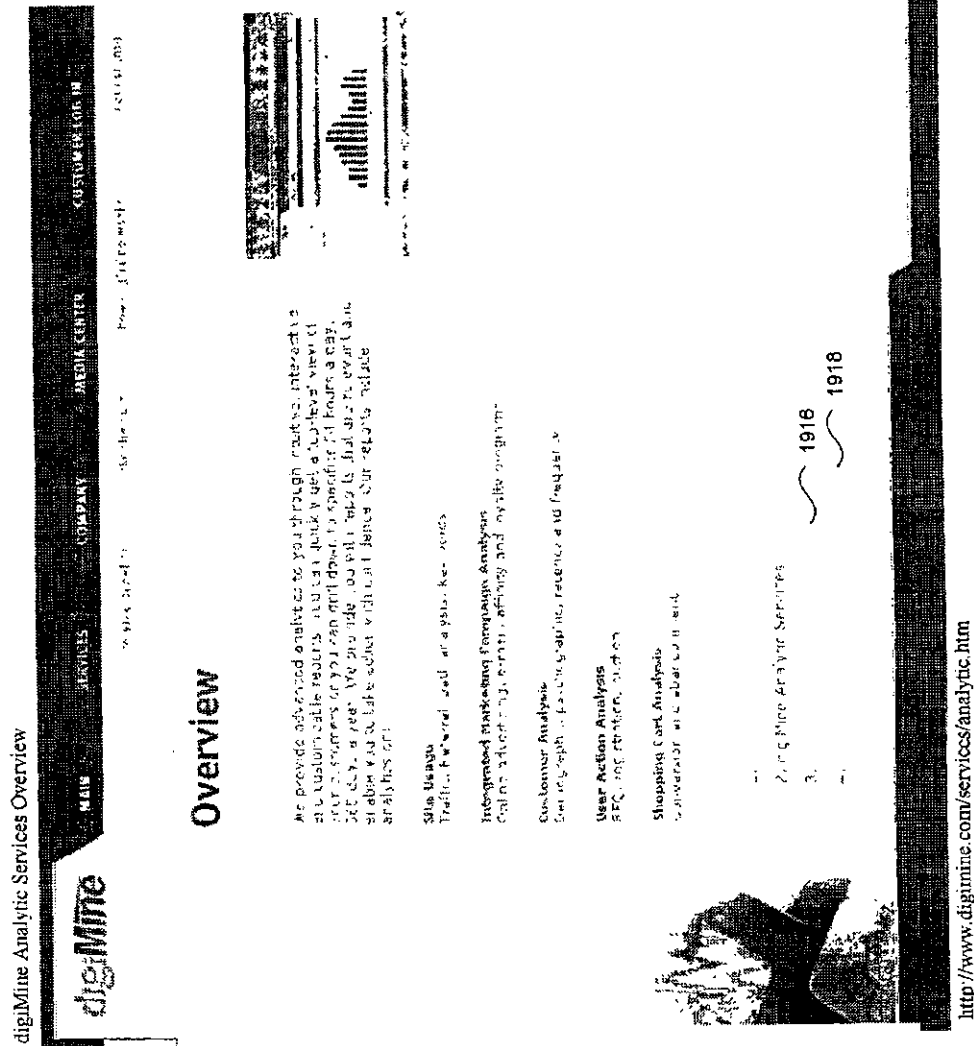


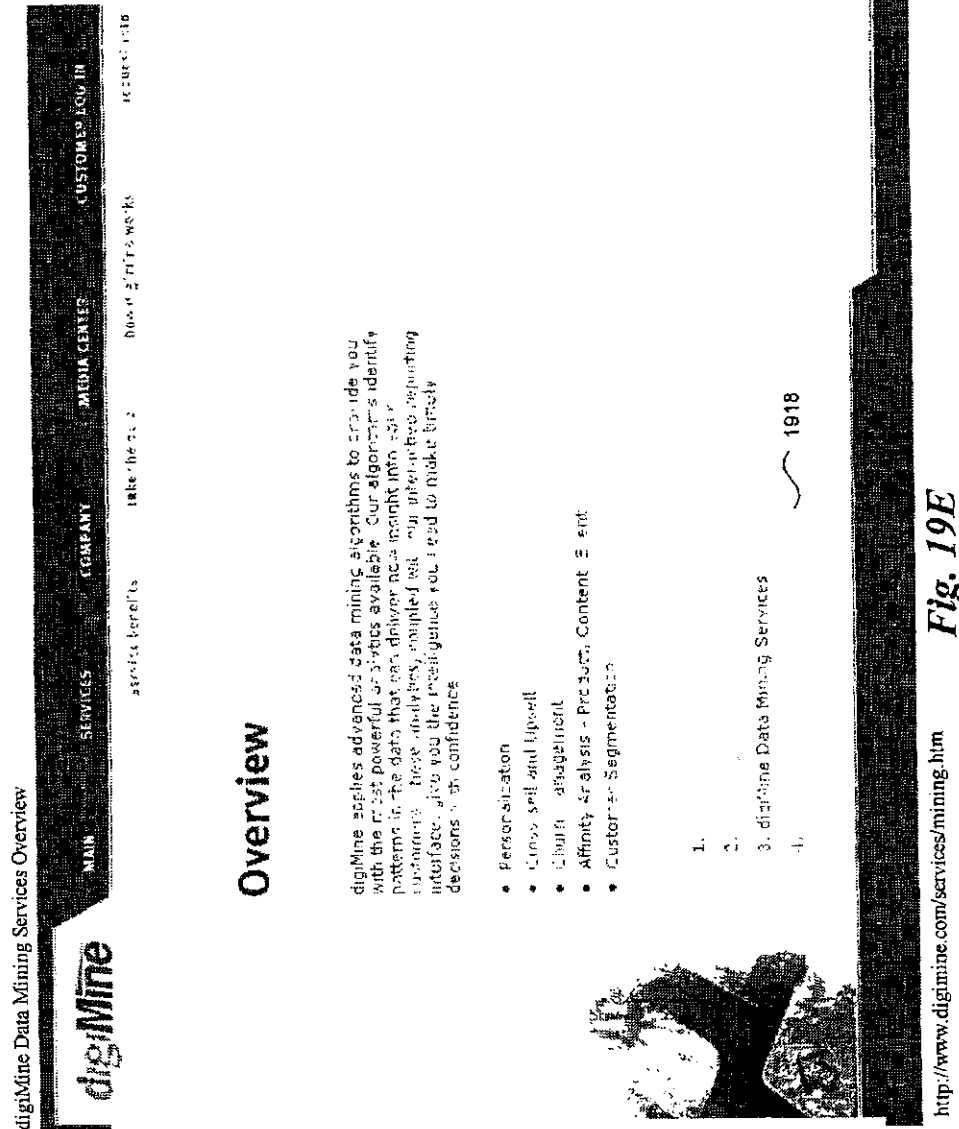
Fig. 19D

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digiMine Data Enhancement Services Overview

**digiMine**

MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

1924

## Overview

digiMine's Data Enhancement Services are helpful tools that make your data more valuable and more usable. These services can also help you manage your data by correcting addresses and eliminating duplicates.

**digiMine's Address Validation/Correction** - digiMine can validate and correct customer addresses using information from the USPS, digiMine's address validation and correction services include National Change of Address (NCOA), Local Address Validation Service (LAAS), and Delivery Sequence File (DSF) processing.

**digiMine's Merge/Purge** - digiMine can also help you identify and purge duplicates. This service enables you to eliminate duplicate records and records that map to the same address (household).

1. Address Validation/Correction  
2. Merge/Purge  
3. National Change of Address (NCOA)  
4. digiMine Data Enhancement Services

<http://www.digimine.com/services/enhancement.htm>

**Fig. 19F**

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digiMine Service Benefits

**digiMine** MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOGIN

1926

## Service Benefits

digimine NYJ services make understanding your customers and your business easy. And up a key way the frustrations associated with figuring out using a home-grown data warehousing and data mining solution.

**Powerful data mining tools**  
Our tools support advanced techniques for analyzing data. This includes the ability to analyze data in real time, as well as the ability to analyze data in a batch mode.

**Easy to use**  
digiMine's Reporting Services are intuitive and easy to use. Our tools are designed to be used by a wide range of users, from analysts to business executives.

**A Comprehensive data asset**  
digiMine's data asset is a comprehensive view of your data. It includes all of the data that is stored in your database, as well as the data that is stored in your data warehouse.

**Quick to deploy**  
digiMine's Reporting Services are easy to deploy. They can be deployed in a matter of hours, and they can be deployed on a variety of hardware and software platforms.

**Affordable**  
Our Reporting Services are affordable. They are priced to provide a high return on investment. And they are easy to integrate with your existing data warehousing and data mining solution.

1930

152 kb secured

<http://www.digimine.com/services/servicebenefits.htm>

Fig. 19G

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Powering your data for business advantage™

**QlikSense™**

## Unlock the Power of Your Data

### Overview

If you're like most businesses, you are generating huge volumes of valuable data - data that conveys the likes and dislikes of current and potential customers about your products, services and website. Do you have the infrastructure in place to turn your data into actionable business intelligence?

QlikSense, Inc.'s cutting new standards in the delivery of powerful analytics and recommendations for businesses. Our data mining services provide you with intuitive reports to understand customer behavior, marketing campaign effectiveness, sales trends, browse-to-buy conversion, customer segment identification and much more. QlikSense's data mining services also deliver predictive applications that give you the ability to personalize web content, cross-sell and upsell.

QlikSense is the only true ASP application service provider for sophisticated data warehousing and data mining solutions. We go far beyond today's web-reporting packages by building a comprehensive data warehouse and by applying data mining tools to the full range of click stream, user registration, product catalog, campaign and transaction data. And our ASP model enables us to provide you with an affordable solution that is quick to deploy and easy to use.

### Service Benefits

#### Powerful data mining tools

Our data mining services provide you with unparalleled intelligence. We give you the tools you need to enable personalization that precisely targets content and maximizes repeat and cross-sell opportunities.

#### Comprehensive data asset

We take your multiple sources of data and build a robust data warehouse for you - a fundamental step in extracting the greatest value from your data. Our scalable data warehousing infrastructure enables us to build customer-specific warehouses that are capable of holding data for the most data-intensive businesses.

*QlikSense, Inc.'s reports provide actionable insight into customer behavior.*

### Do you know enough about your customers?

1. How many customers came to your website today?  
2. How many left without a purchase?  
3. How many did not buy the product you wanted them to?  
4. How many did you lose to your competitors?  
5. What products should you recommend to your customers?  
6. What are your most profitable customers?  
7. How many customers are returning to your website?  
8. What are the most common reasons for returns?  
9. What are the most common reasons for cancellations?  
10. What are the most common reasons for complaints?

*How many of these questions can you answer today? You can't answer them easily and often a few. With QlikSense, you will be able to answer these questions and more.*

Fig. 19H

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**Affordable**

Our web-based ASP model allows us to deliver a powerful, high-end service that is efficient and affordable. Setup costs are minimal and do not require additional IT resources. Fixed monthly fees cover all expenses related to hardware, software, operations and reporting.

**Easy to use**

digMine™ Reporting Services are intuitive and organized to deliver relevant insight instantly. Our interactive reports allow you to customize your view of your analytics. And you don't have to be a statistician to understand your data.

**Quick to deploy**

digMine offers the fastest time to deployment. In fact, a typical installation allows us to setup and begin daily reporting within a few days. In many cases, our customers have full analytics in less than 24 hours.

digMine™ Services do not require you to invest in additional IT resources, nor do we require you to deploy data tags. We simply install a digMine Slurper™ at your data center that encrypts and compresses your data for transmission at pre-determined times. digMine's Slurper™ is a simple piece of software that has the ability to pull web server logs and gather data from any OLE-DB-compliant database - from Oracle, SQL, DB2 and others. This process does not compromise your network security or require you to open your firewall.

Once your data is transferred to digMine's data center, it is parsed, cleaned and loaded into a secure data warehouse.

digMine then produces detailed and accurate reports that are delivered 24 hours a day, 7 days a week, 365 days a year. You can access your reports through a dedicated https connection using a standard browser. The reports are completely secure and require user authentication. In fact, as an administrator, you have the ability to set various levels of access permission for different business users in your company. Your data is also made available for export.

digMine provides data mining services for predictive applications. These predictive components give you the ability to personalize web content and cross-sell or up-sell products. Data mining components run in real-time on your web site or in batch applications, such as targeted e-mail.

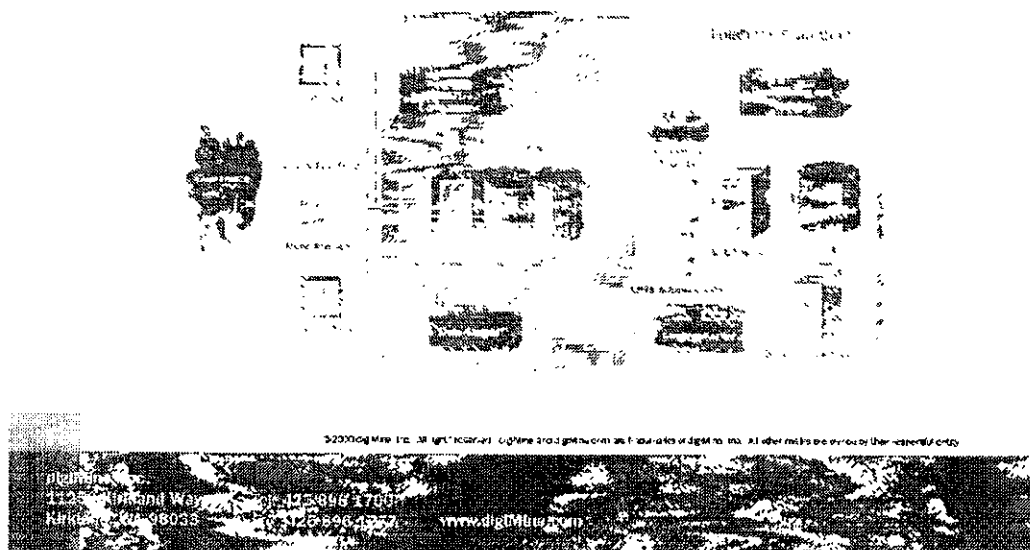


Fig. 19I

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digMine Services: Take the Quiz

**digMine**

MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

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## Take the Quiz

With the abundance of sites at digMine, it's easy to get lost and not know where to go next. Let's take it a few minutes and see what our visitors are most interested in. With the specific content on lot of products they're interested in, they have a lot of choice they'll return to.

How many of these customers are you interested in? You're not alone if you can only answer a few. If you dig Mine, you'll be able to answer a lot of these questions and more.

How many customers come to your site yesterday?

How many were first time visitors?

Can you get a list of these new customers and send them a thank you this next day?

What are most visited products on your site?

What products should you consider making "loss leaders" to attract new customers?

What are your top selling products or services? Have they changed in the last month?

How many shoppers go through your home page?

Which marketing programs are most effective at driving new customers to your site?

Which customers are likely to "churn" and which are loyal shoppers on your site?

What is the expected "life time value" of your customers?

<http://www.digmine.com/services/quiz.htm>

Fig. 19J



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How digiMine Works

1805

**digiMine**

HOME SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

Get the digiMine

## How digiMine Works

digiMine Services do not require any additional investment in IT resources. nor do we require you to deploy data tags. We simply install a digiMine Data Surfer™ at your data center that encrypts and compresses your data for transmission at predetermined times. digiMine's Data Surfer™ is a simple software application that has the ability to log all server logs and gather data from any commercial database such as Oracle, SQL, DB2 and others. This process does not compromise your network security or require you to open your firewall. Alternatively, you can also send your data to us through a secure web transfer.

Once your data is transferred to digiMine's data center, it is parsed, cleaned and loaded into a secure data warehouse. We can also merge, purge, relocate and correct your data.

We then analyze your data using in-product insightful analytics. These analytics are made available and delivered to you through interactive reports, web-based dashboards that are available 24 hours a day, 365 days a year. You can choose your reports through a dedicated and secure application using a standard browser.

Real-time data mining components (re-couplers called from Java or .asp) are available independently of the digiMine data center to avoid any requirement to store data on servers. These can be run in real-time on your web servers if your applications such as targeted email.

<http://www.digimine.com/services/howworks.htm>

**Fig. 19K**

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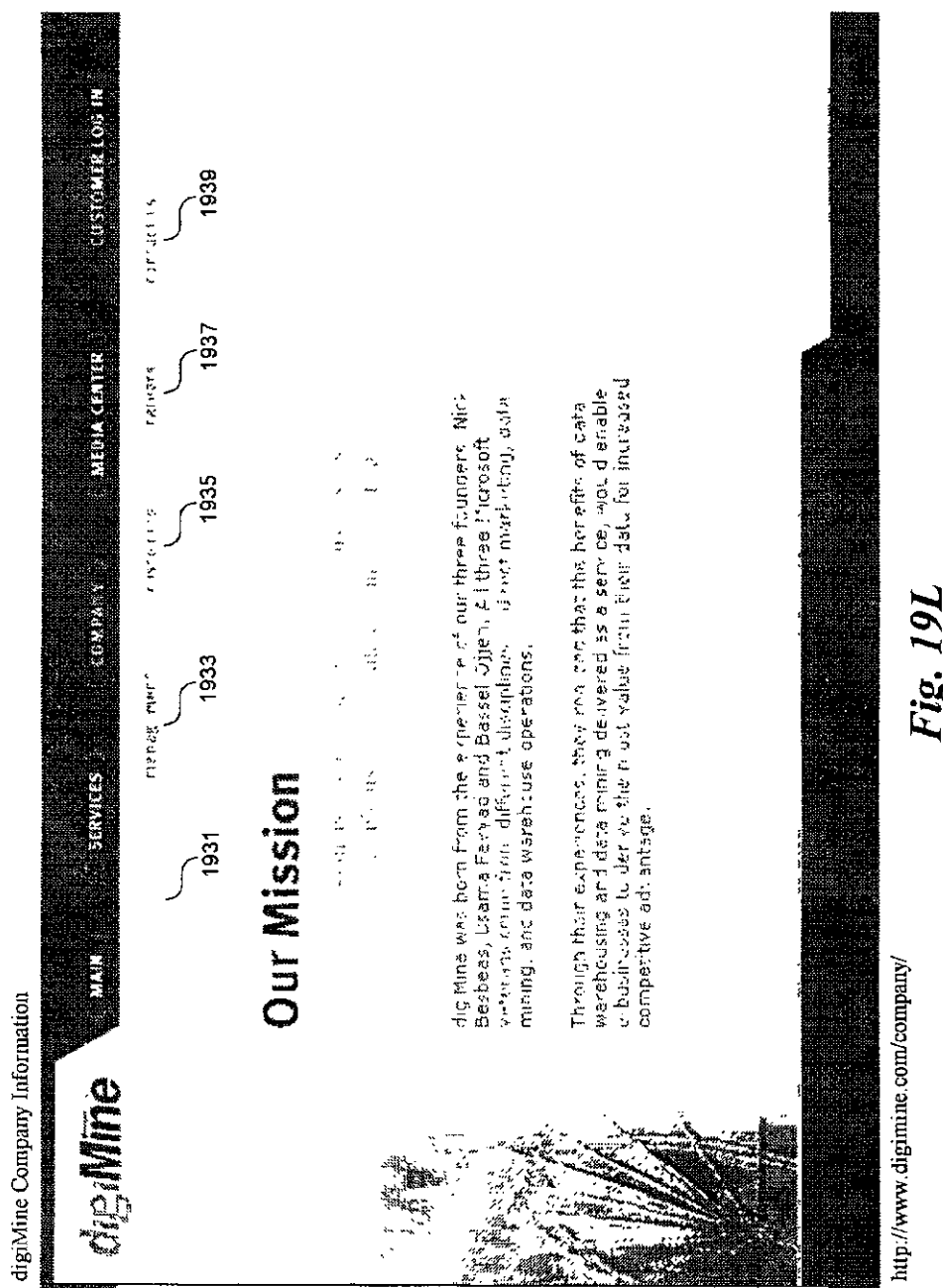


Fig. 19L

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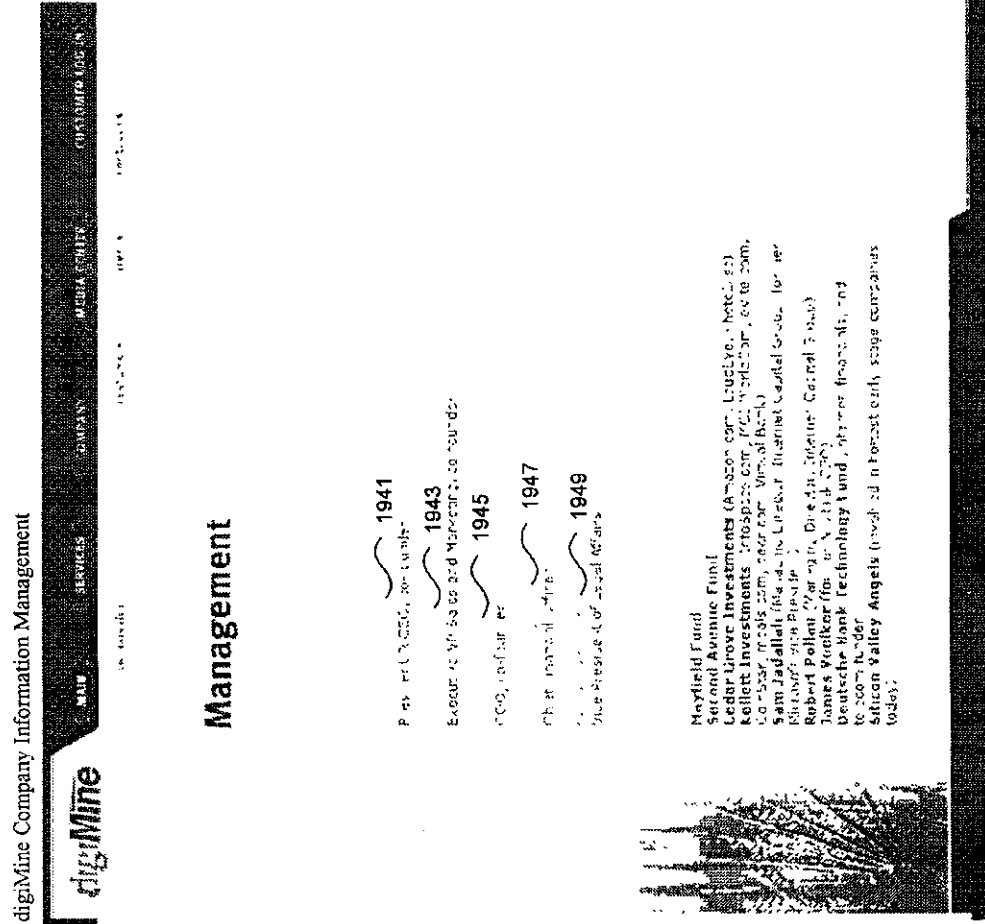


Fig. 19M

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digiMine Executive Bio: Bob Bolan  
 digiMine  
 MAIN SERVICES COMPANY CUSTOMER FOR ME

1937

## Management

**Bob Bolan, Esq.**  
 Vice President of Legal Affairs

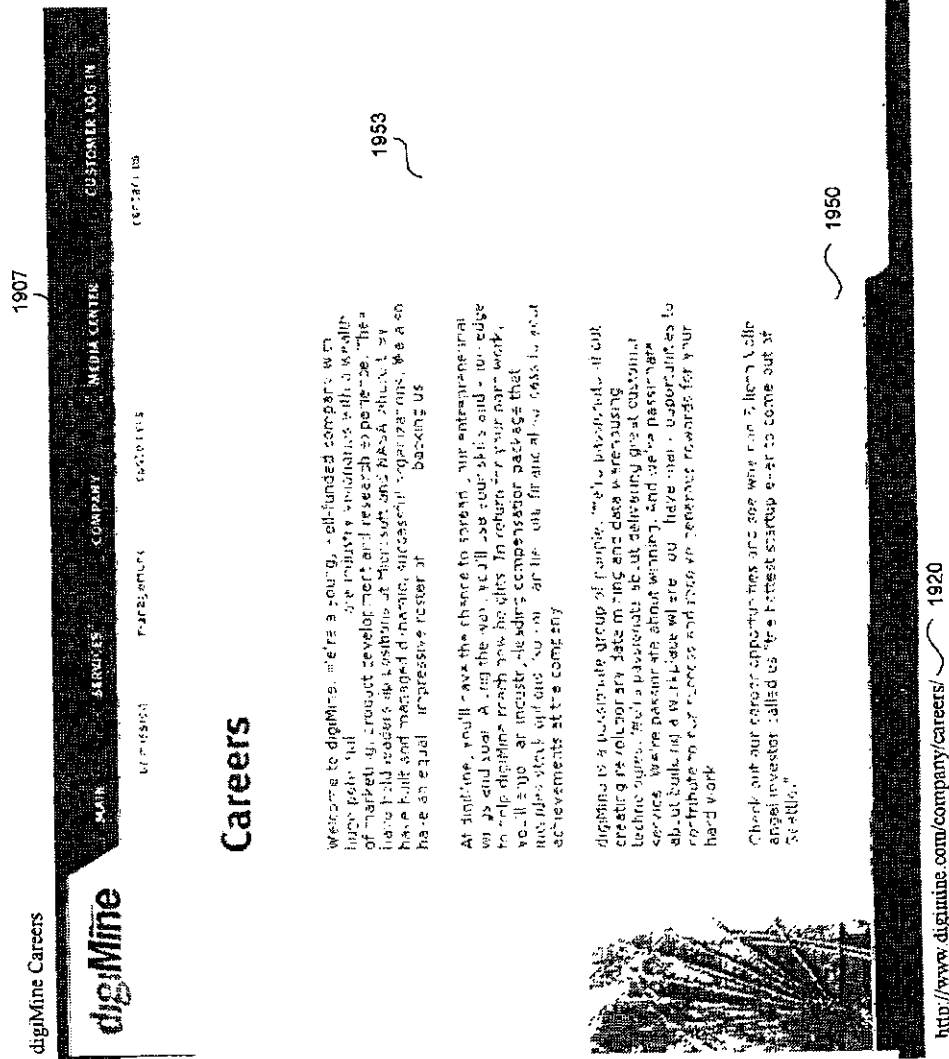


Bob Bolan is a seasoned legal professional with over 20 years of experience in the technology industry. He is currently the Vice President of Legal Affairs at digiMine, where he oversees all legal matters related to the company's operations. Prior to joining digiMine, Bob held senior legal positions at several major technology companies, including Microsoft and Intel. He is a frequent speaker at industry conferences and has authored several articles on legal issues in the technology sector. Bob is also a member of the American Bar Association and the National Technology Law Association.

Bob Bolan is a seasoned legal professional with over 20 years of experience in the technology industry. He is currently the Vice President of Legal Affairs at digiMine, where he oversees all legal matters related to the company's operations. Prior to joining digiMine, Bob held senior legal positions at several major technology companies, including Microsoft and Intel. He is a frequent speaker at industry conferences and has authored several articles on legal issues in the technology sector. Bob is also a member of the American Bar Association and the National Technology Law Association.

<http://www.digimine.com/company/BobBolan.htm>

Fig. 19N



**Fig. 190**

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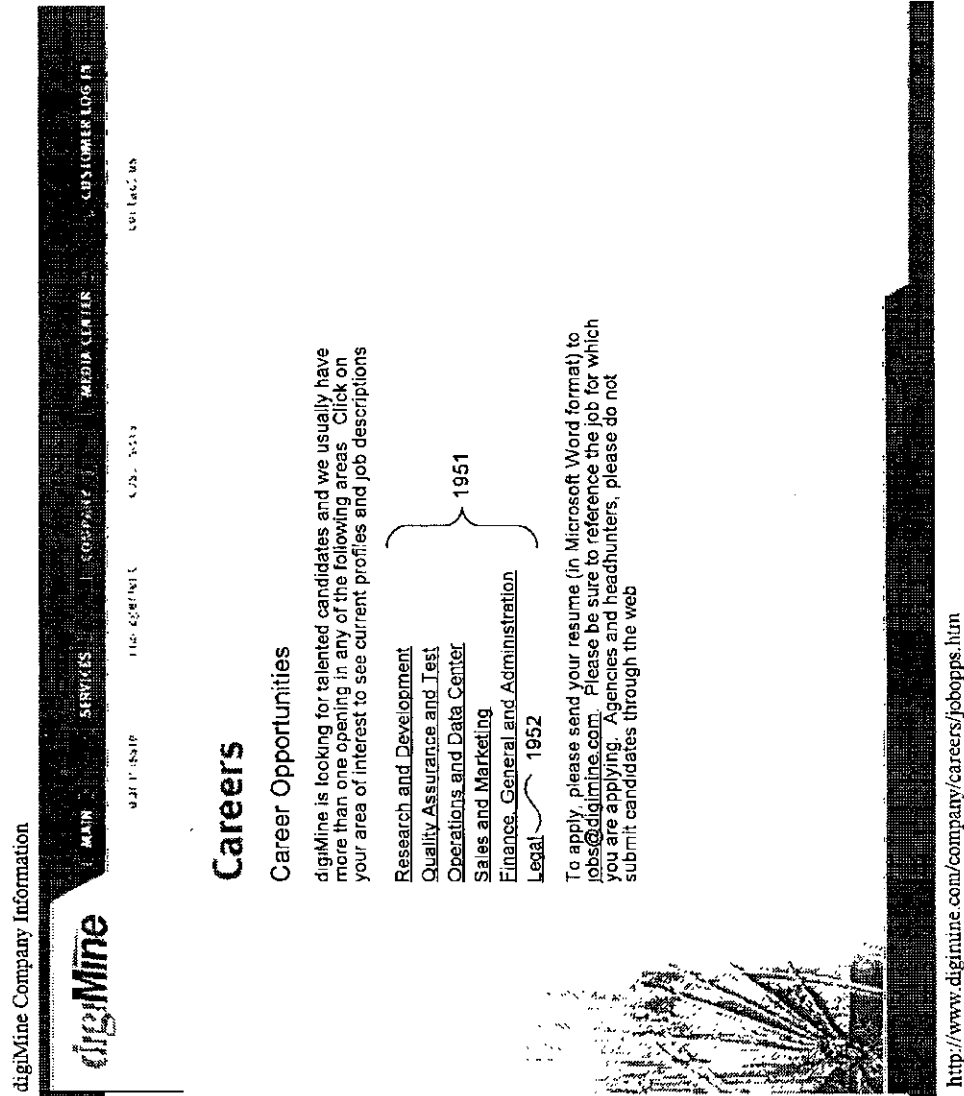


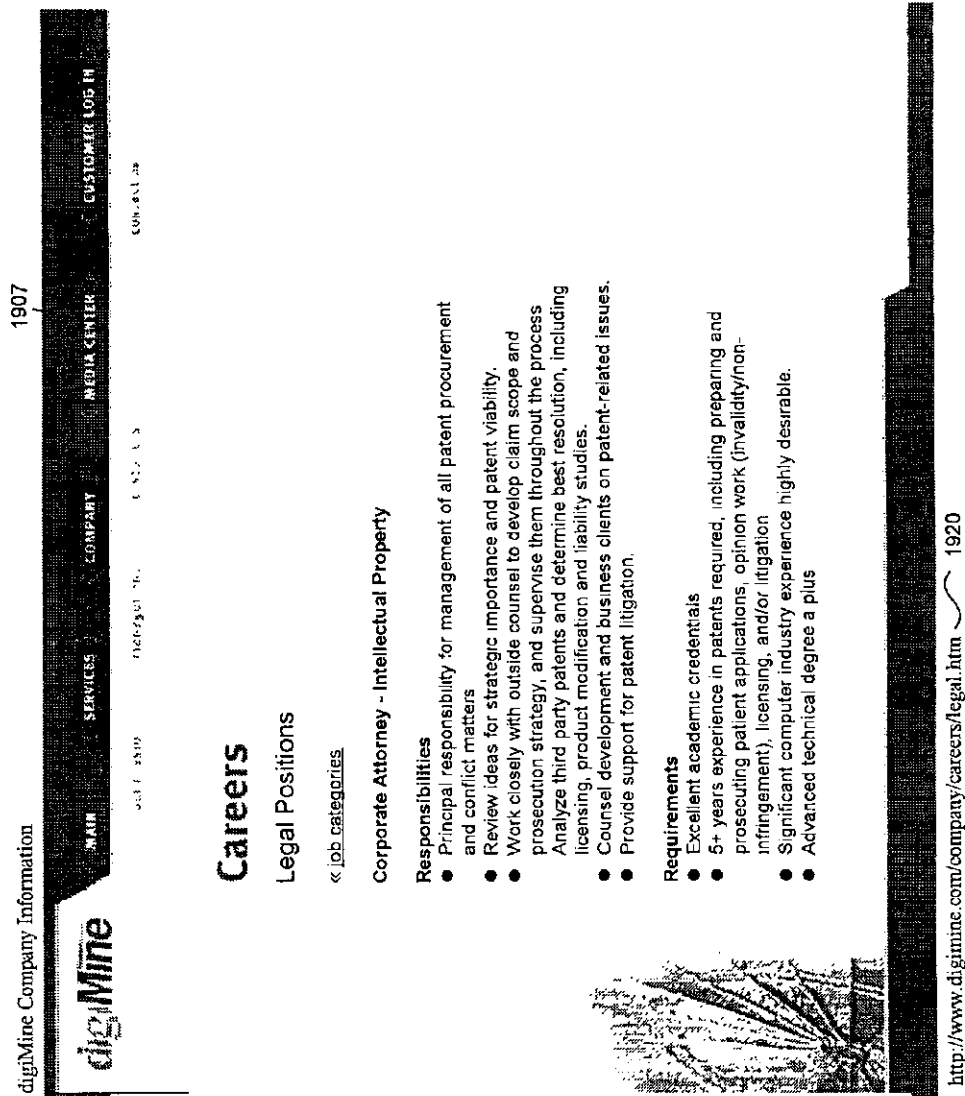
Fig. 19P

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digiMine Company Information

1907

HOME SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

1920

## Careers

### Legal Positions

[« job categories](#)

#### Corporate Attorney - Intellectual Property

##### Responsibilities

- Principal responsibility for management of all patent procurement and conflict matters
- Review ideas for strategic importance and patent viability.
- Work closely with outside counsel to develop claim scope and prosecution strategy, and supervise them throughout the process
- Analyze third party patents and determine best resolution, including licensing, product modification and liability studies.
- Counsel development and business clients on patent-related issues.
- Provide support for patent litigation.

##### Requirements

- Excellent academic credentials
- 5+ years experience in patents required, including preparing and prosecuting patent applications, opinion work (invalidity/non-infringement), licensing, and/or litigation
- Significant computer industry experience highly desirable.
- Advanced technical degree a plus

<http://www.digimine.com/company/careers/legal.htm> 1920

Fig. 19Q

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digimine Media Page

**digimine**

MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOG IN

1955 1957 1959

press releases

MEDIA CENTER

## digimine wants to turn data into gold

seattle 12

The algorithms and data-mining software created by Usama Fayyad have been used to find volcanoes on Venus and galaxies far, far away. Now the former scientist at NASA's Jet Propulsion Lab is using that same technology to create digimine...

Please direct all press related inquiries to

the sixth annual WSA industry achievement awards

digimine Services selected as finalist for Industry Achievement Award

January 17, 2001 - Technology Review, MIT's Magazine of Innovation, Names digimine CEO Usama Fayyad to TOP 10

December 18, 2000 digimine' deals with EML to Power Data Warehousing and Data Mining Service

*Fig. 19R*

<http://www.digimine.com/mediacenter/>



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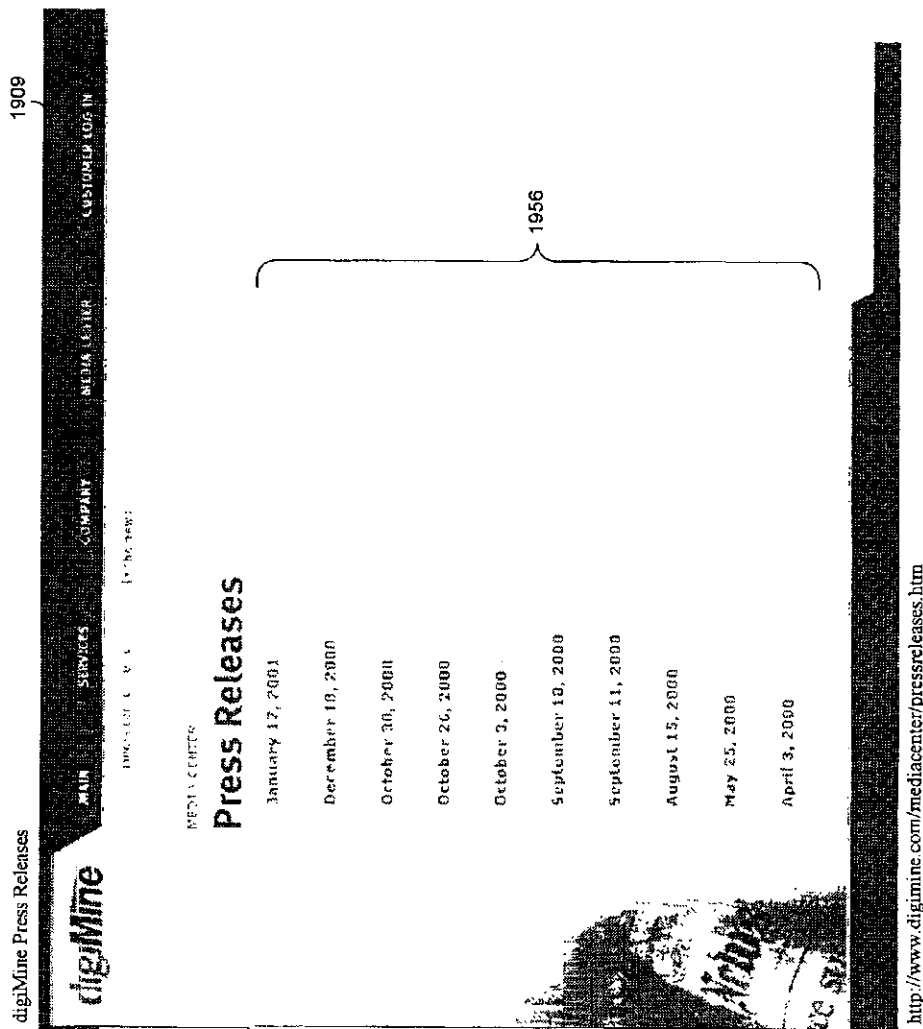


Fig. 19S

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digimine Customer Login

**digimine**

MAIN SERVICES COMPANY MEDIA CENTER CUSTOMER LOGIN

## Customer Log In

Welcome. Please enter your case-sensitive User ID, Password, and Company.

username  
password  
company

Submit

1960

Did you forget your password? Please  
manager. your account

1920

<https://insight.digimine.com/>

**Fig. 19T**

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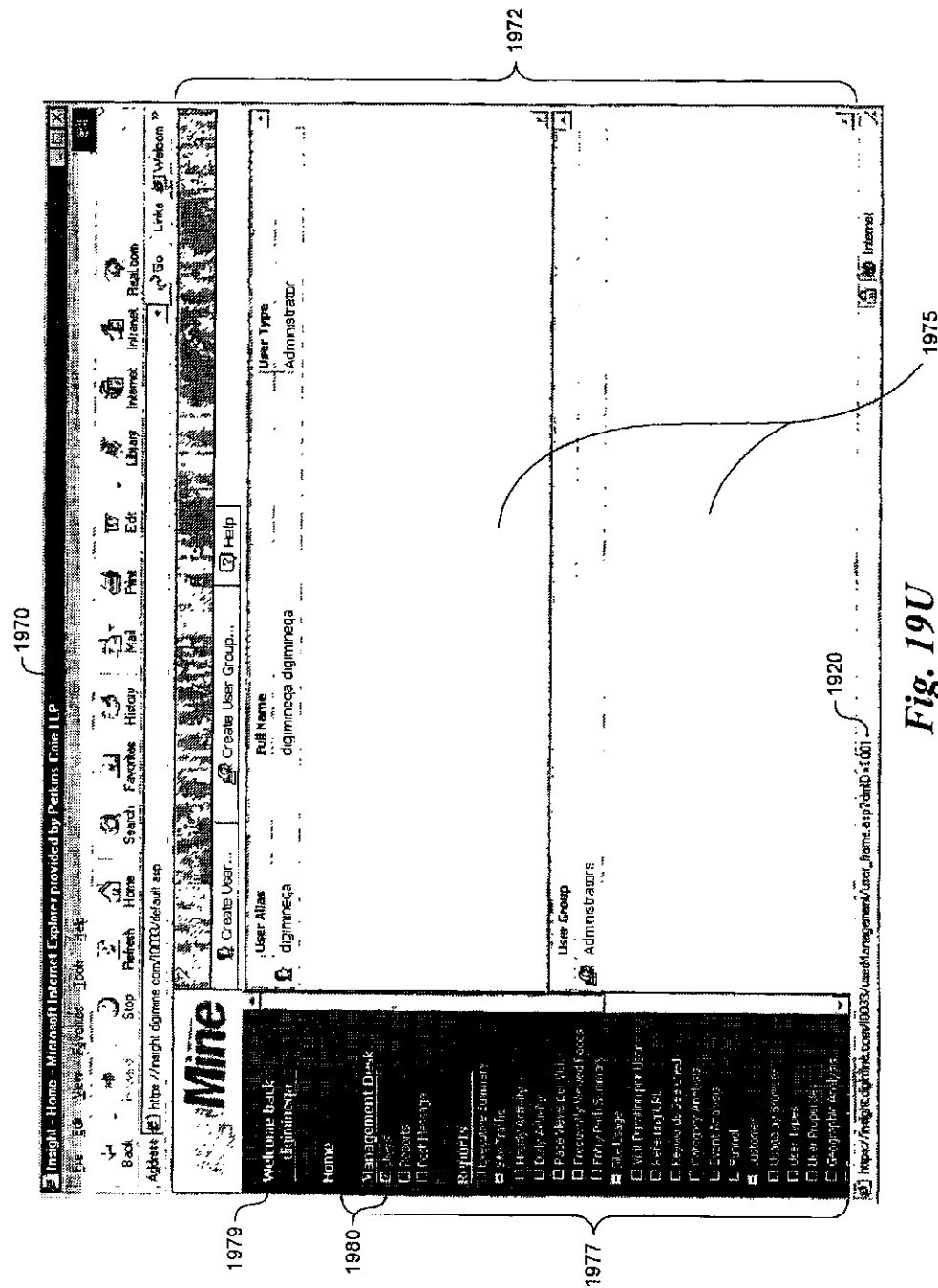
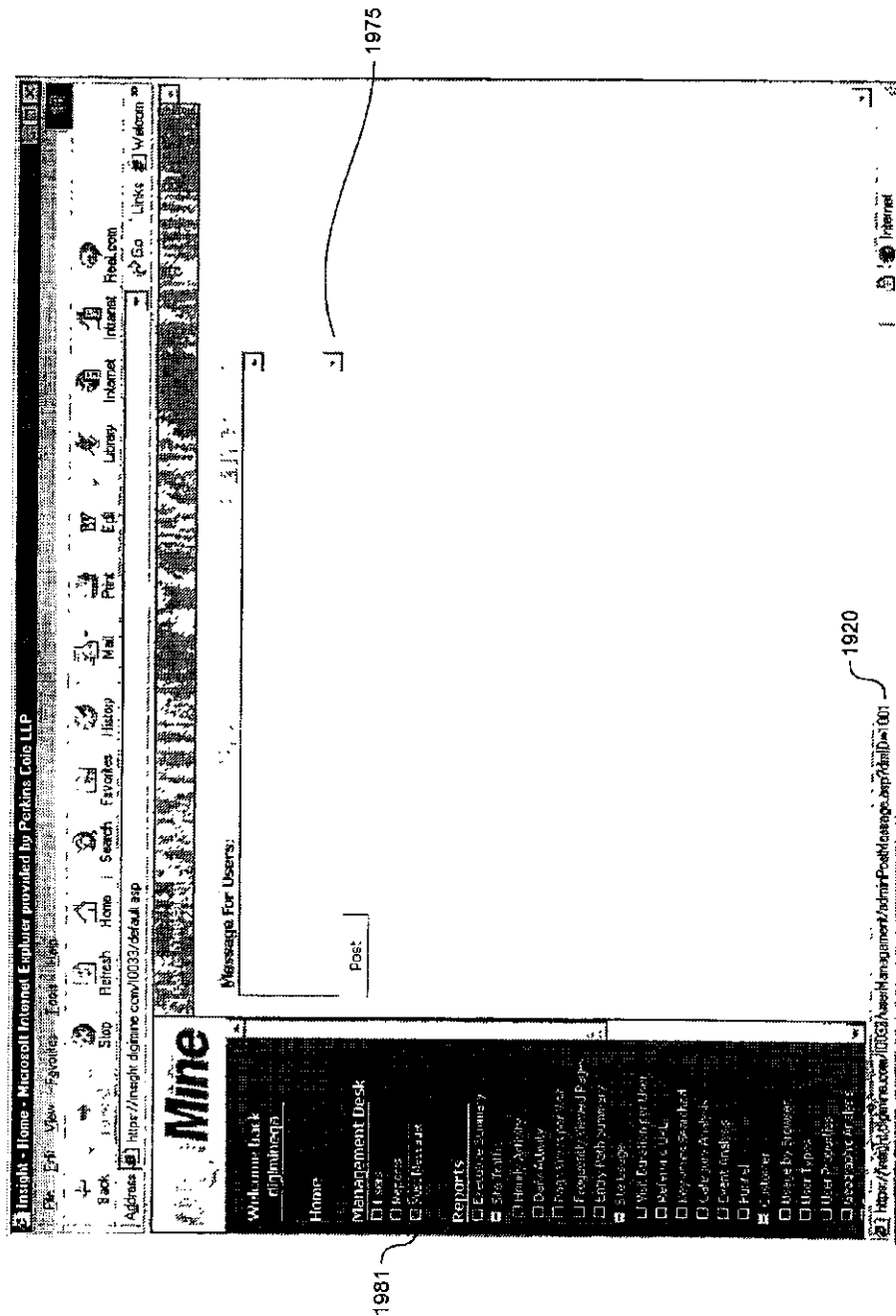
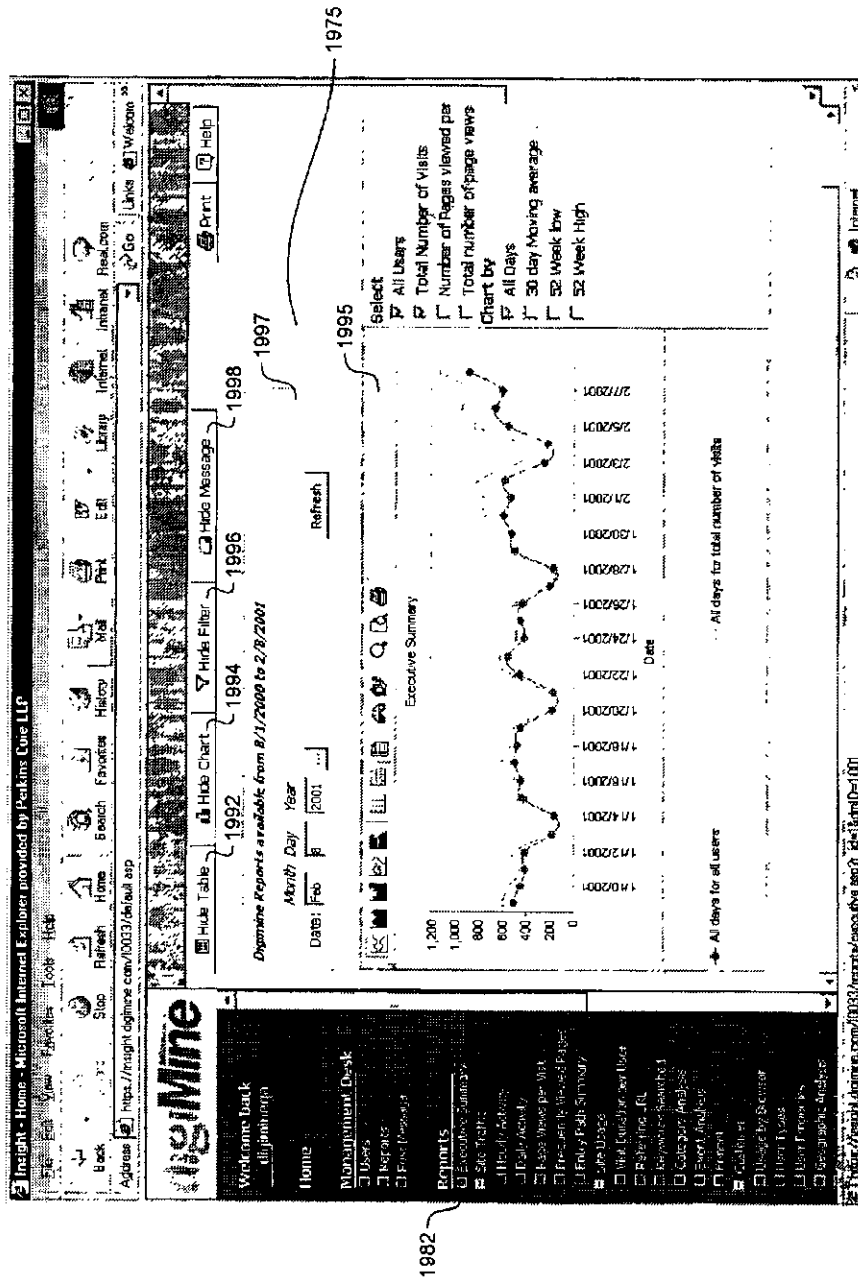


Fig. 19U



**Fig. 19V**



**Fig. 19W**

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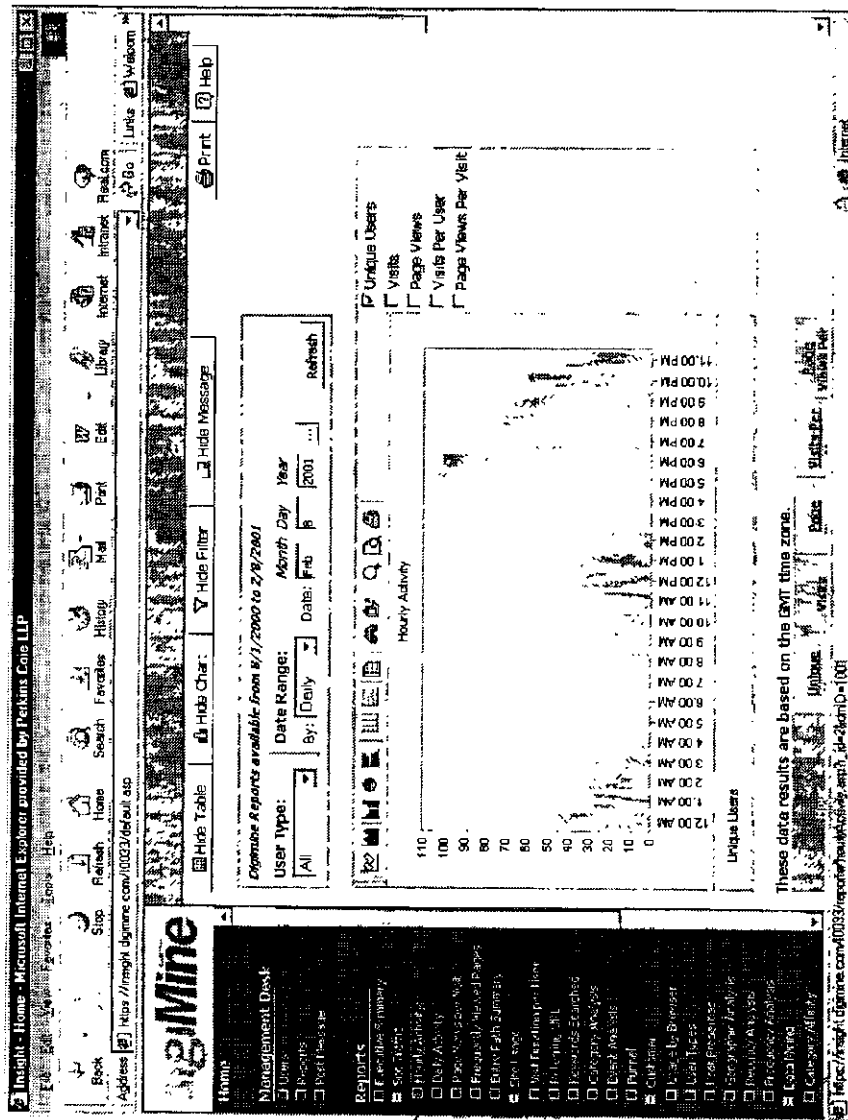


Fig. 19X

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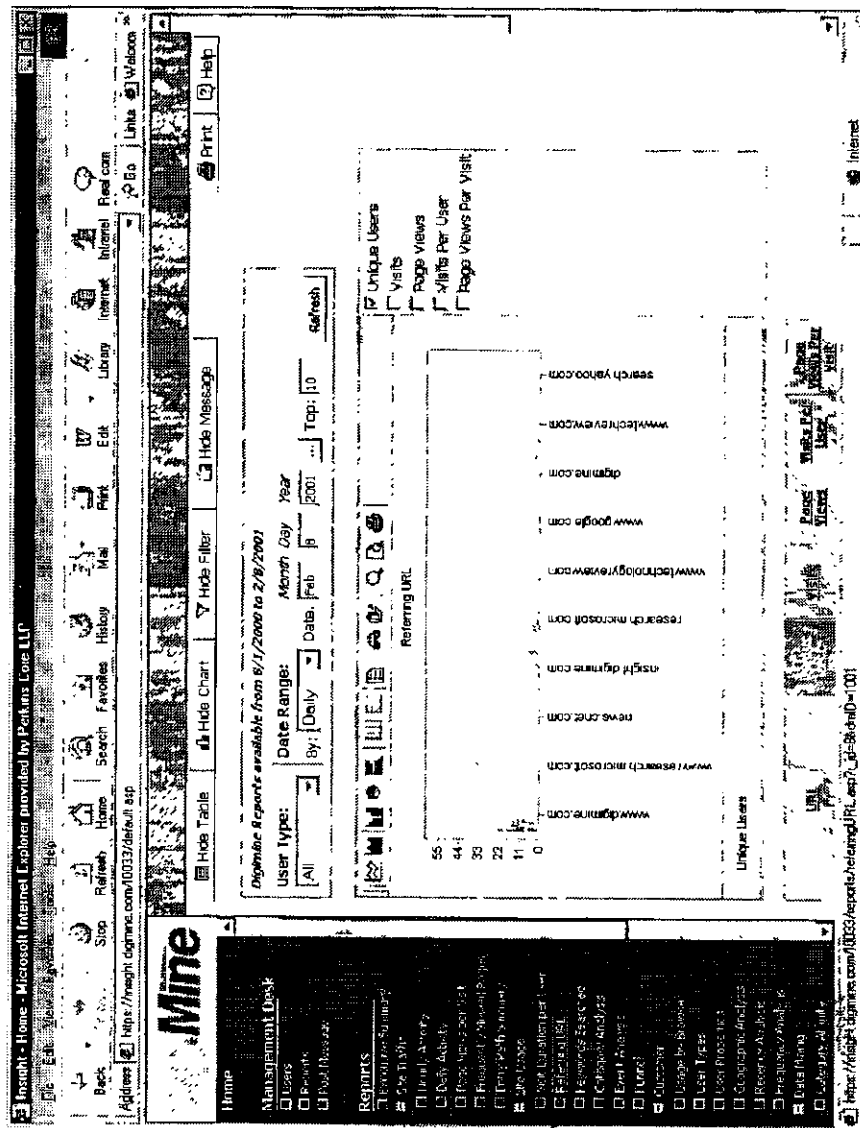
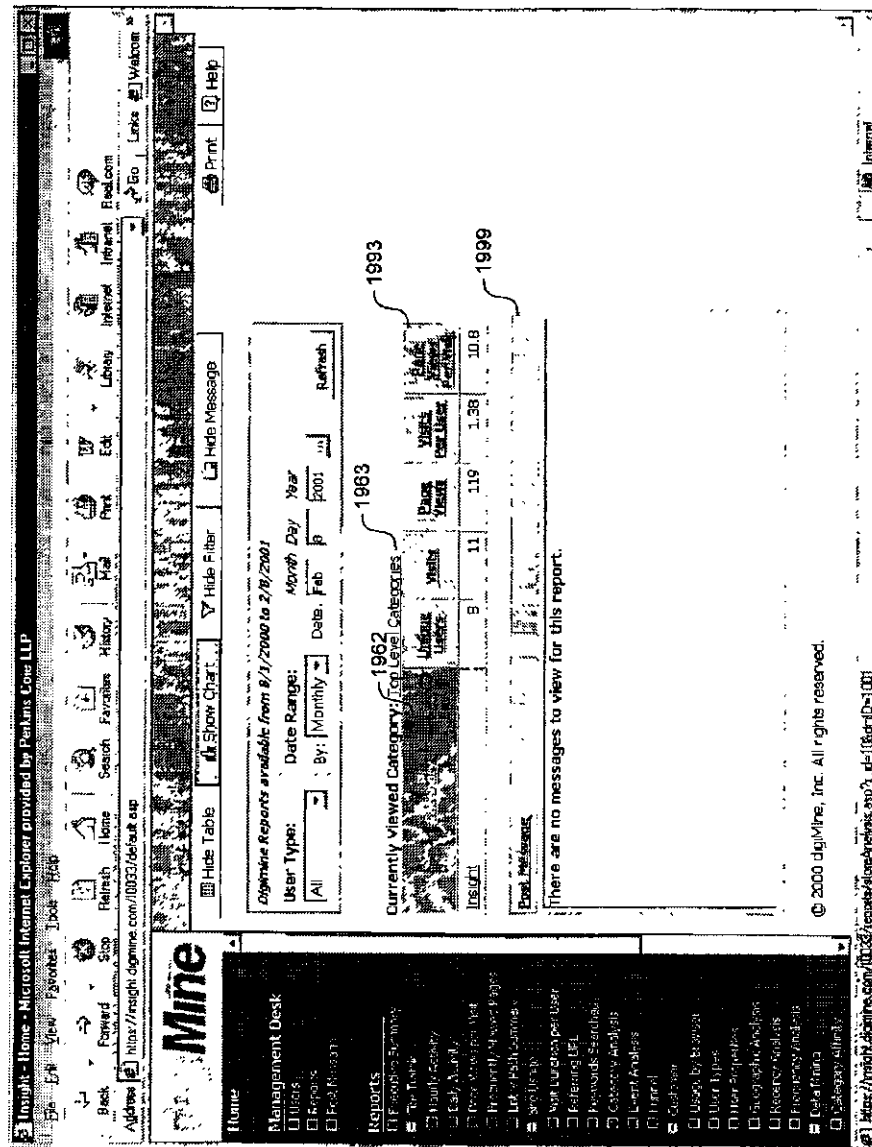


Fig. 19Y

1984



**Fig. 19Z**

1985



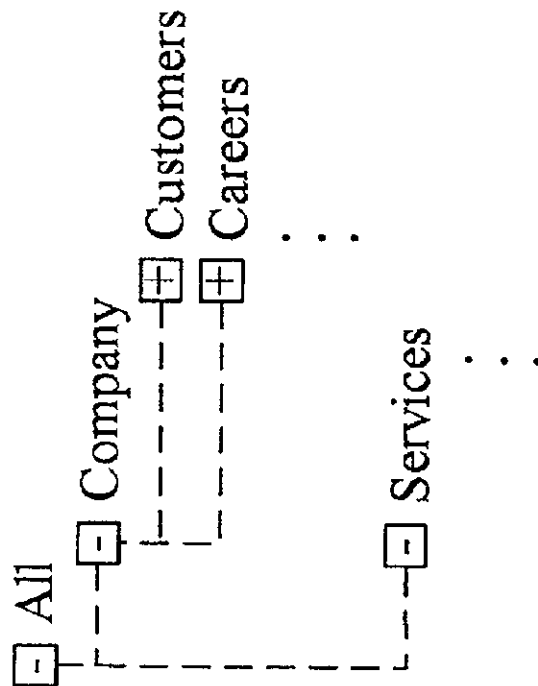
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Example Hierarchical Category Selection



*Fig. 19AA*

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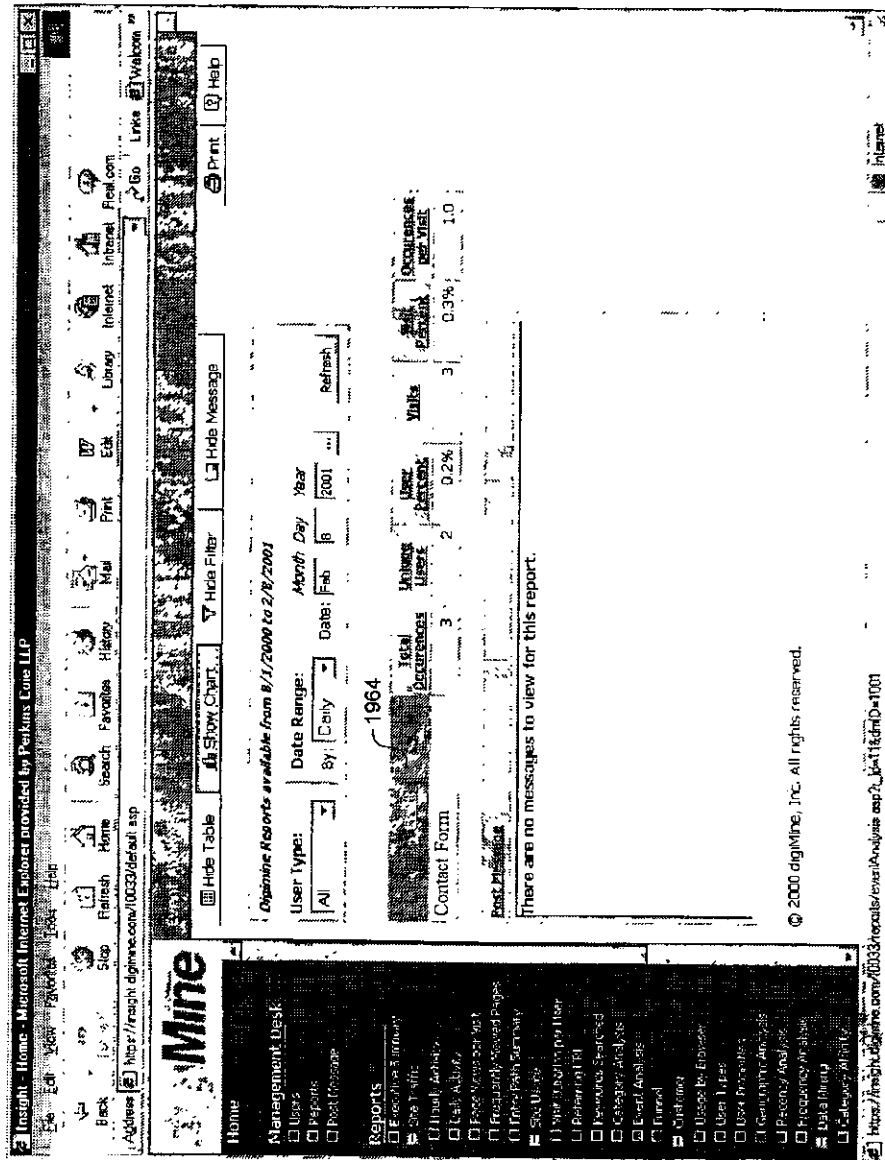


Fig. 19AB

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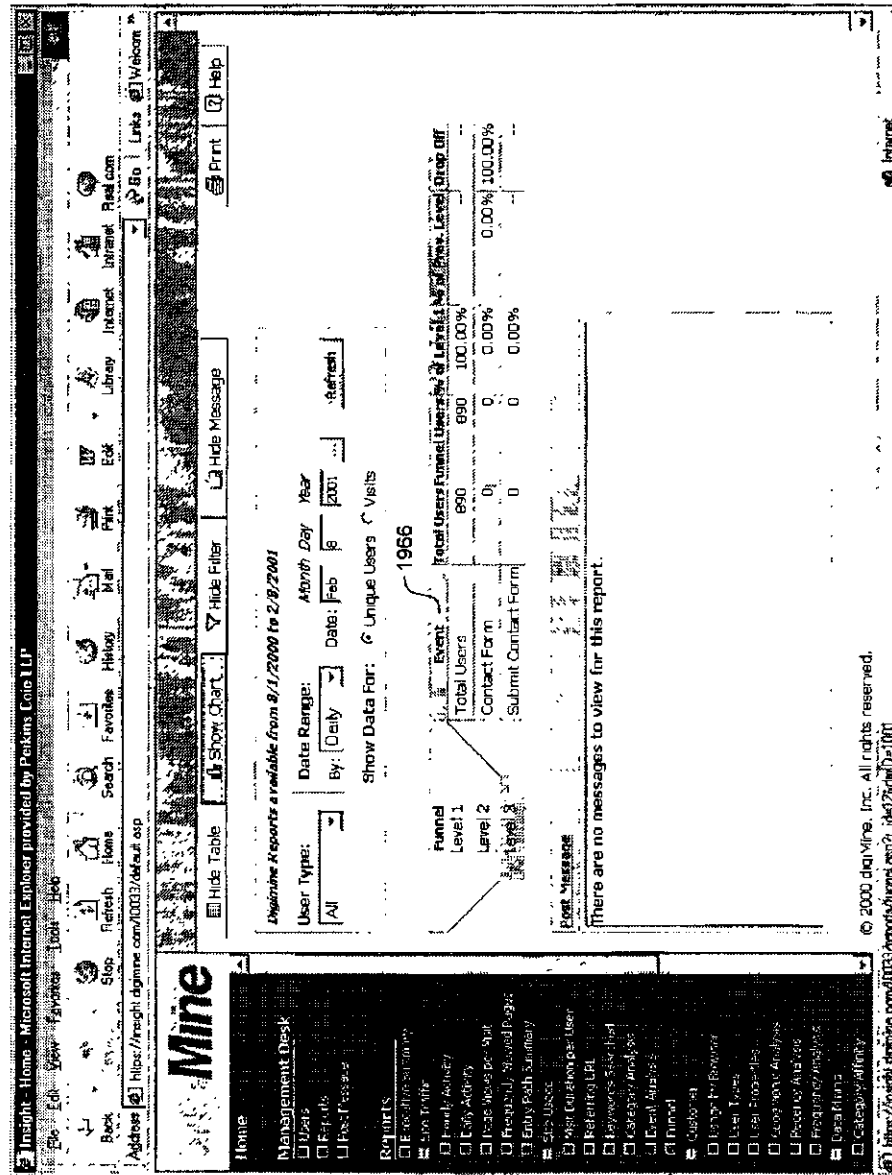


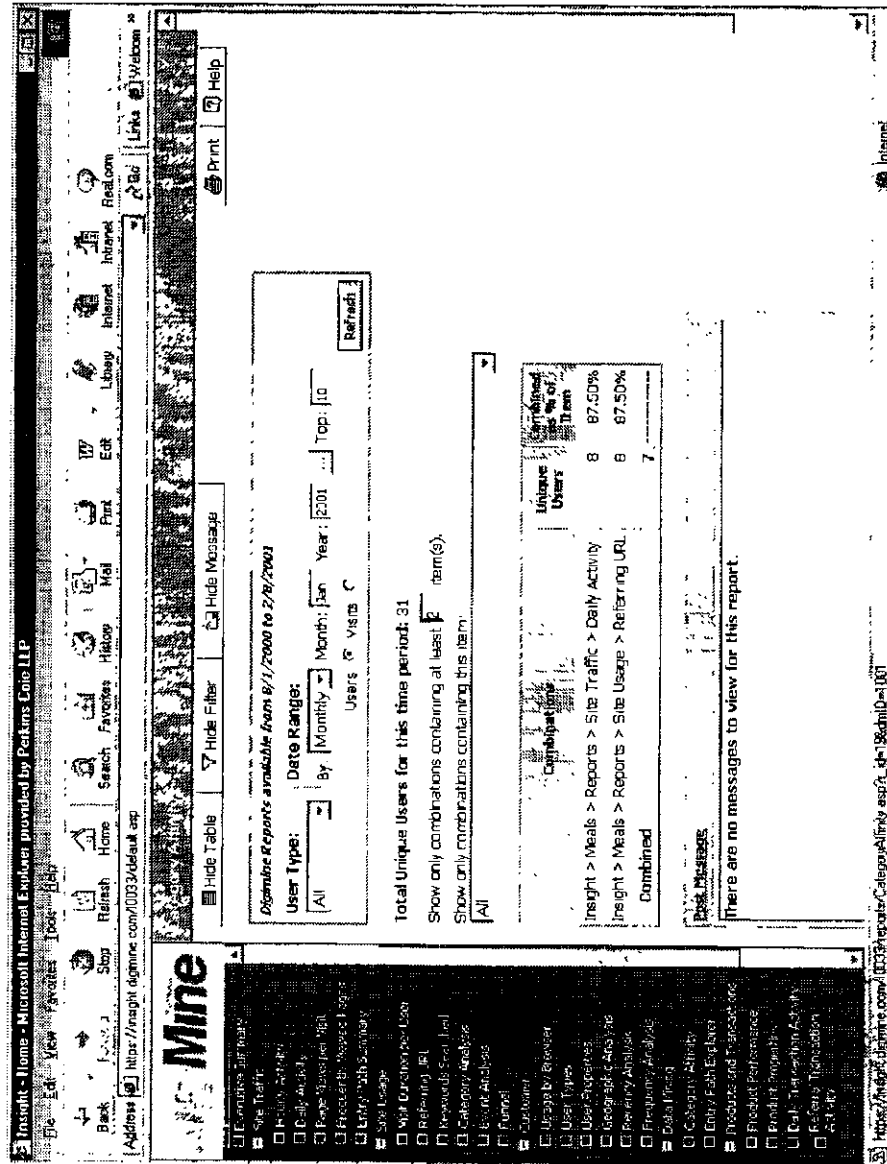
Fig. 19AC

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1988

Fig. 19AD

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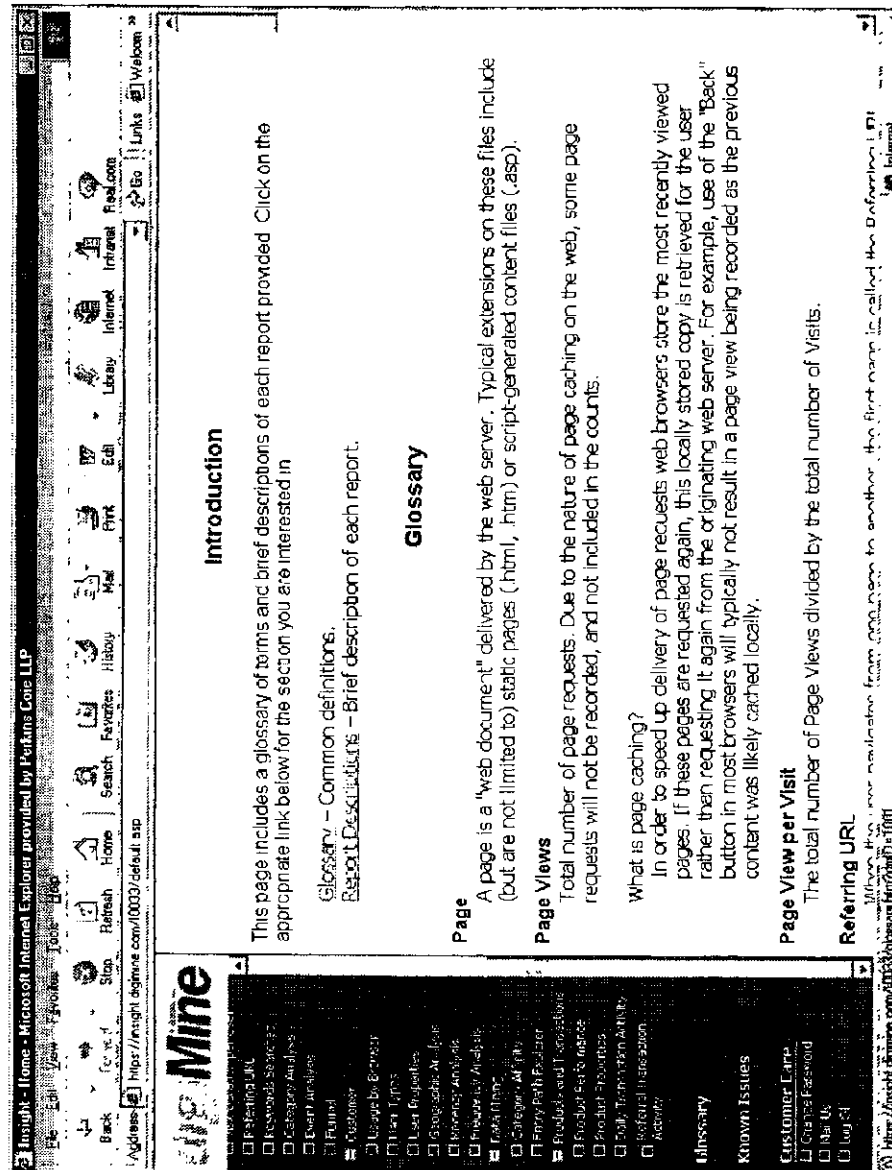


Fig. 19AE

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## Overview

(91 KB, Requires

digiMine is setting new standards in the delivery of advanced analytics, data warehousing and data mining for eBusinesses. As an application service provider (ASP), we deliver a comprehensive and affordable solution that is quick to deploy and easy to use.

What truly sets digiMine apart from the competition is our ability to go far beyond today's web reporting services by using the most powerful data mining and personalization tools. By applying high-end data mining algorithms to the full range of click stream, user registration, product catalog, campaign and transaction data, we provide you with the most relevant business intelligence. And we enable you to take action with precision and speed.

digiMine's SMI Services include:

- { 1. digiMine Warehousing Services ~ 1912
- { 2. digiMine Analytic Services ~ 1914
- { 3. digiMine Data Mining Services ~ 1916
- { 4. digiMine Data Generation Services ~ 2005

<http://www.digimine.com/services/>

*Fig. 20*

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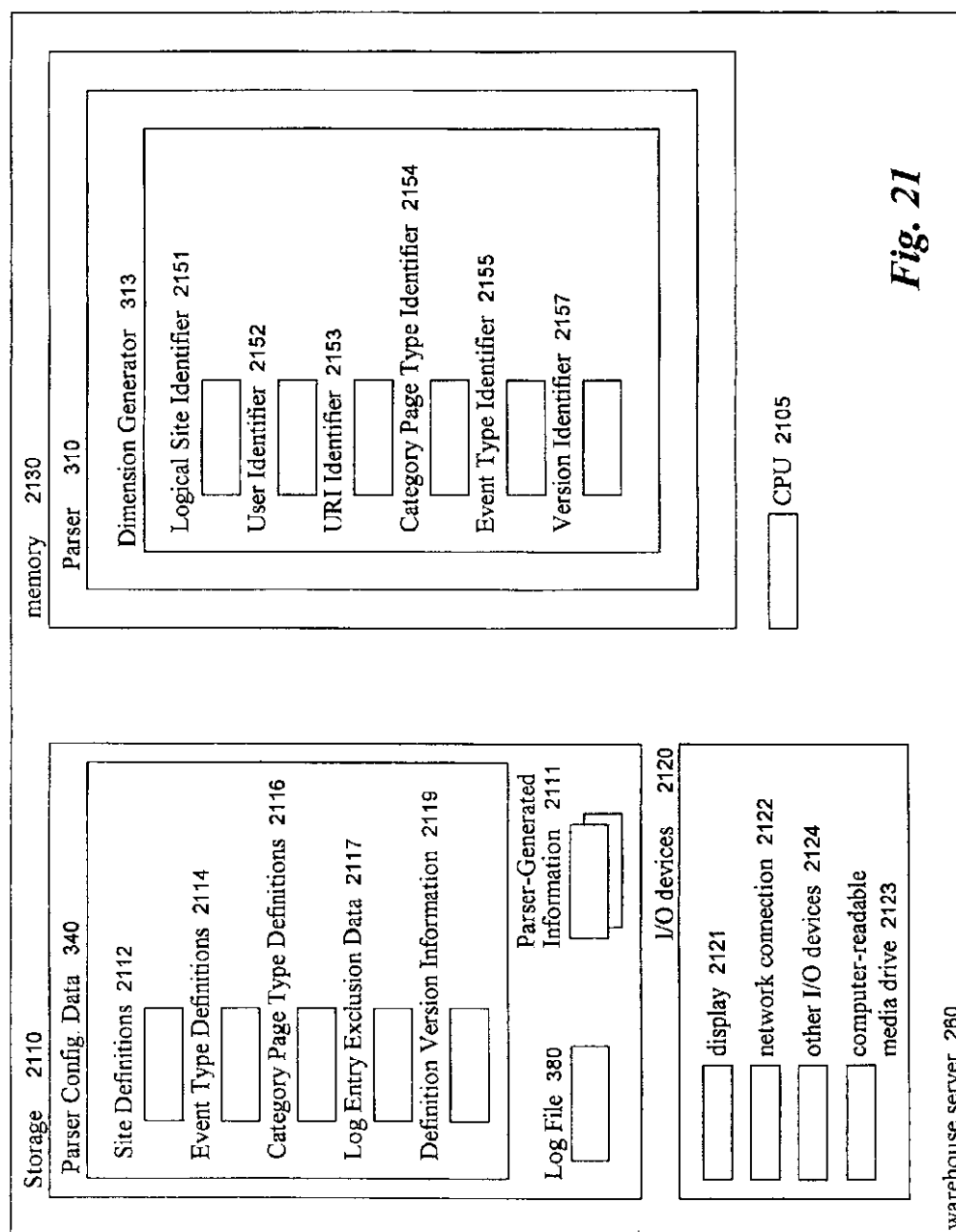


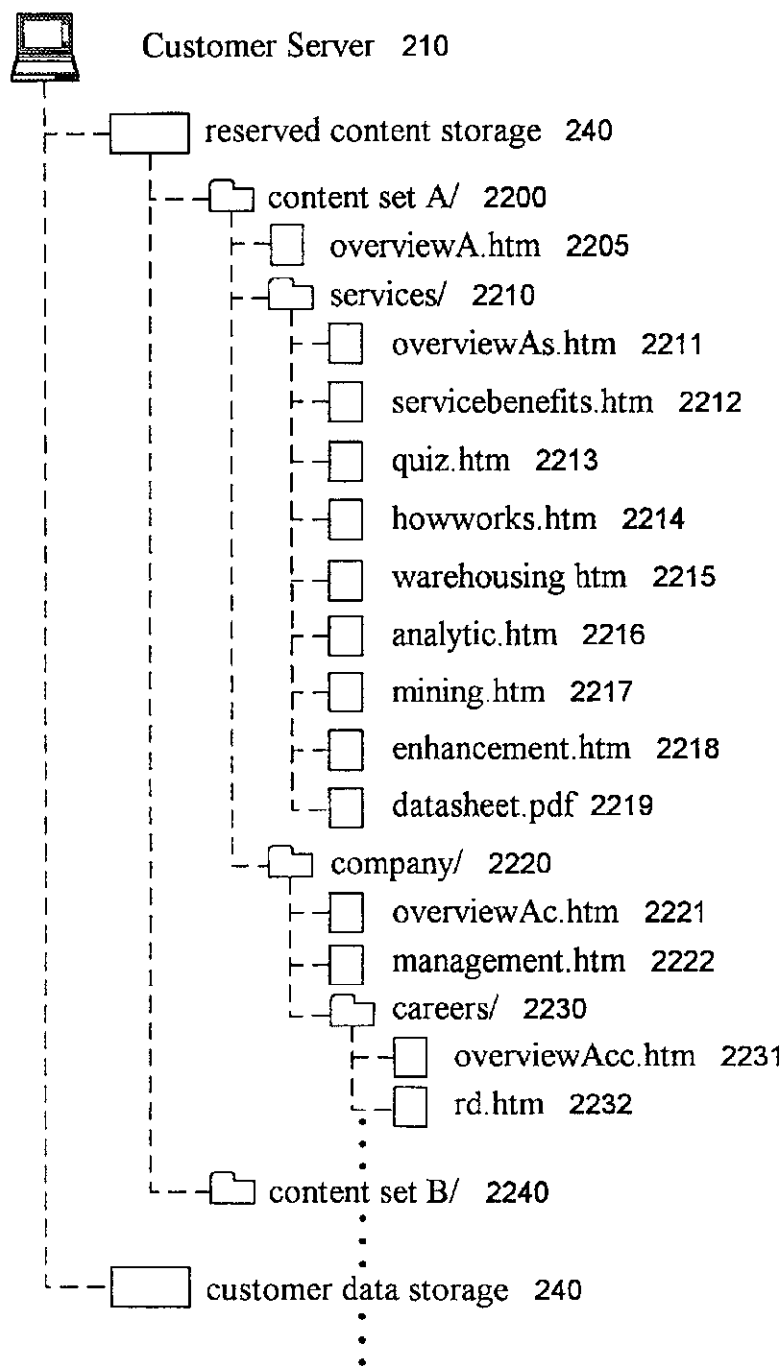
Fig. 21

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*Fig. 22A*



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## Content Set A

## Category Hierarchy Table 2250

Category 2251	ID 2252	Category Parent 2253
Services	1	—
Company	2	—
Media Center	3	—
Analysis	4	—
Service Benefits	5	1
Take the Quiz	6	1
⋮		
Careers	20	2
⋮		
R&D	30	20
QA	31	20
⋮		

## Content Set A Content Category Table 2260

Content 2261	Category Page Type Definition ID 2262
overviewA.htm	—
overviewAs.htm	1
servicebenefits.htm	1
⋮	
rd.htm	30
⋮	

***Fig. 22B***

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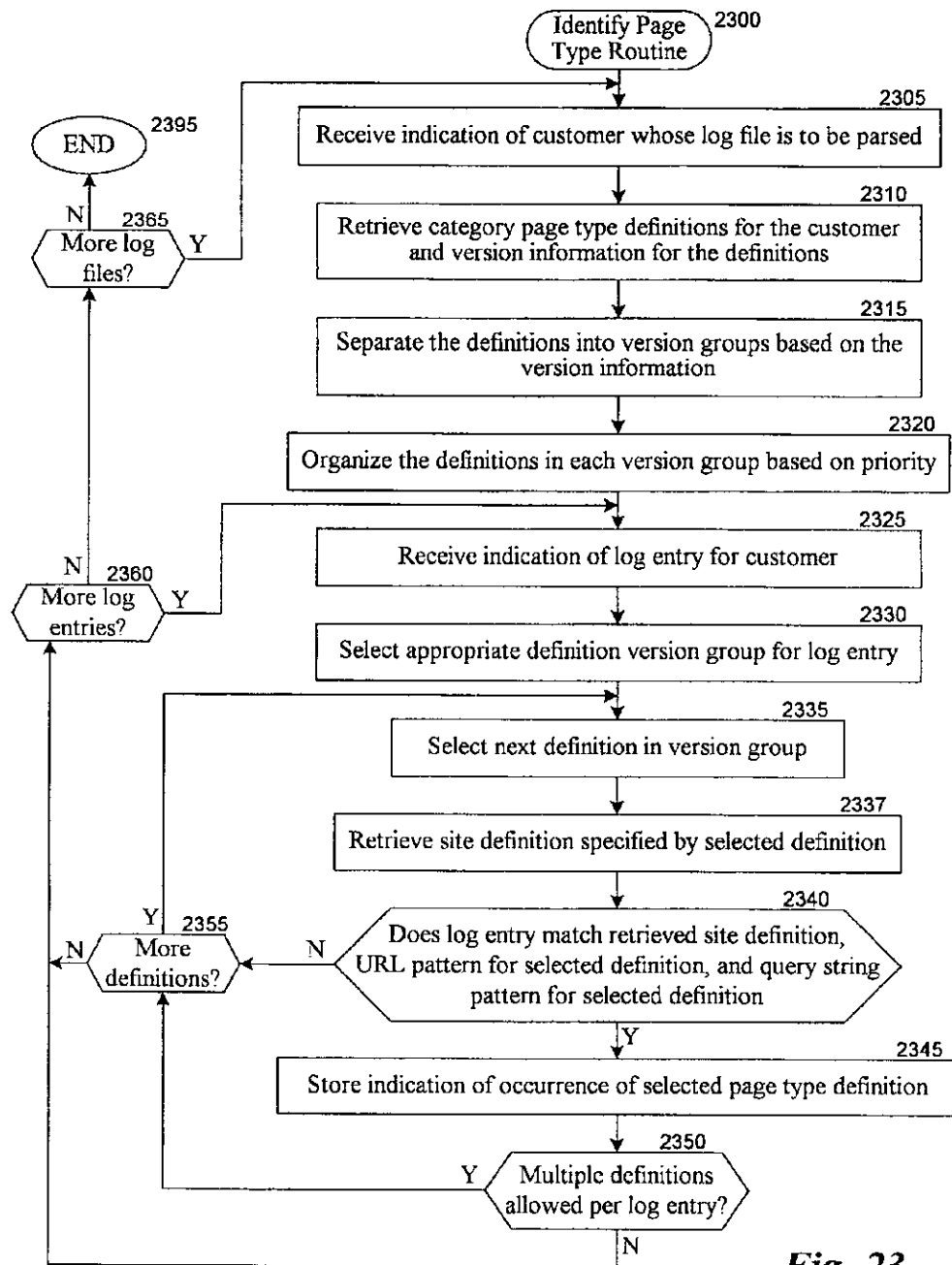


Fig. 23

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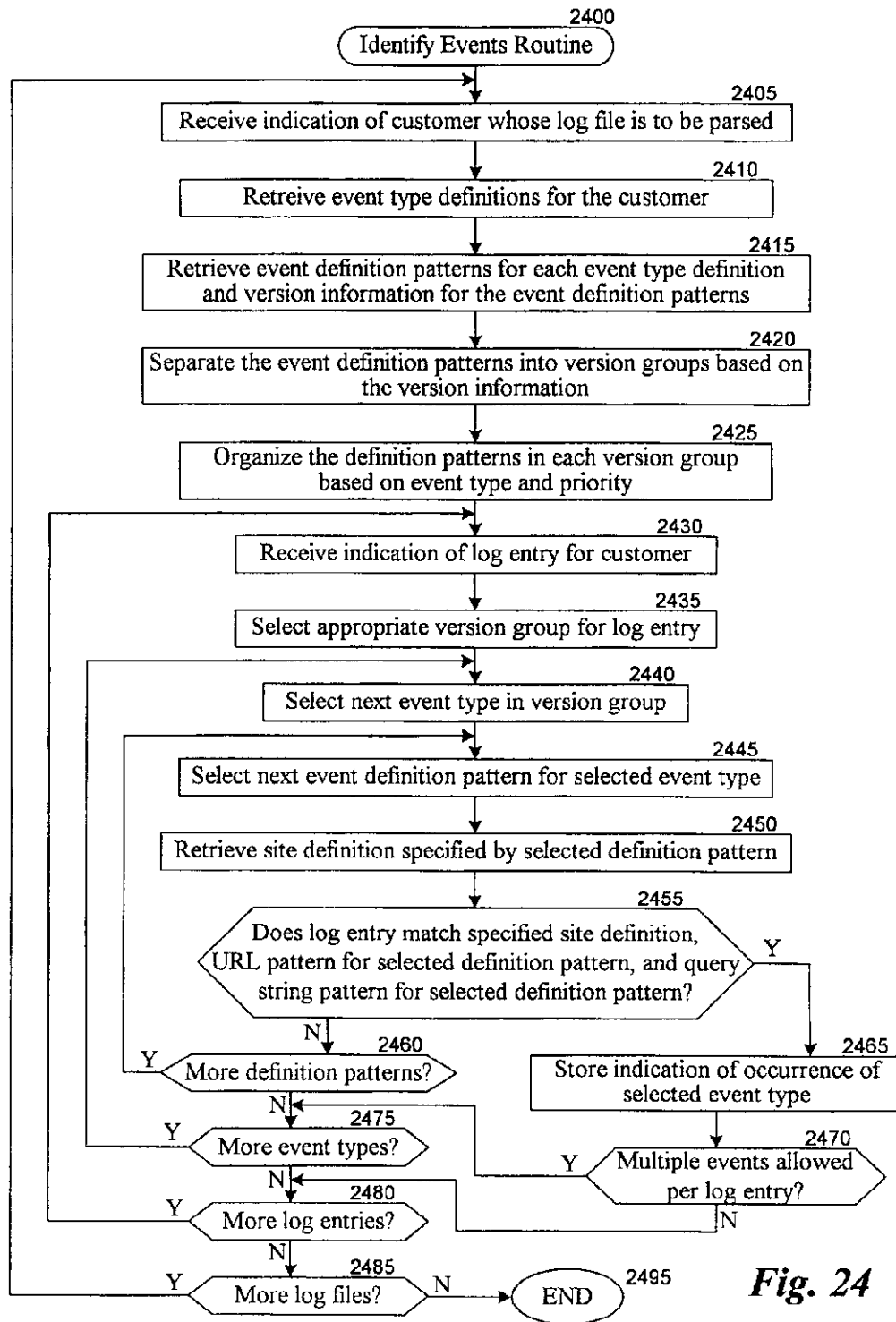


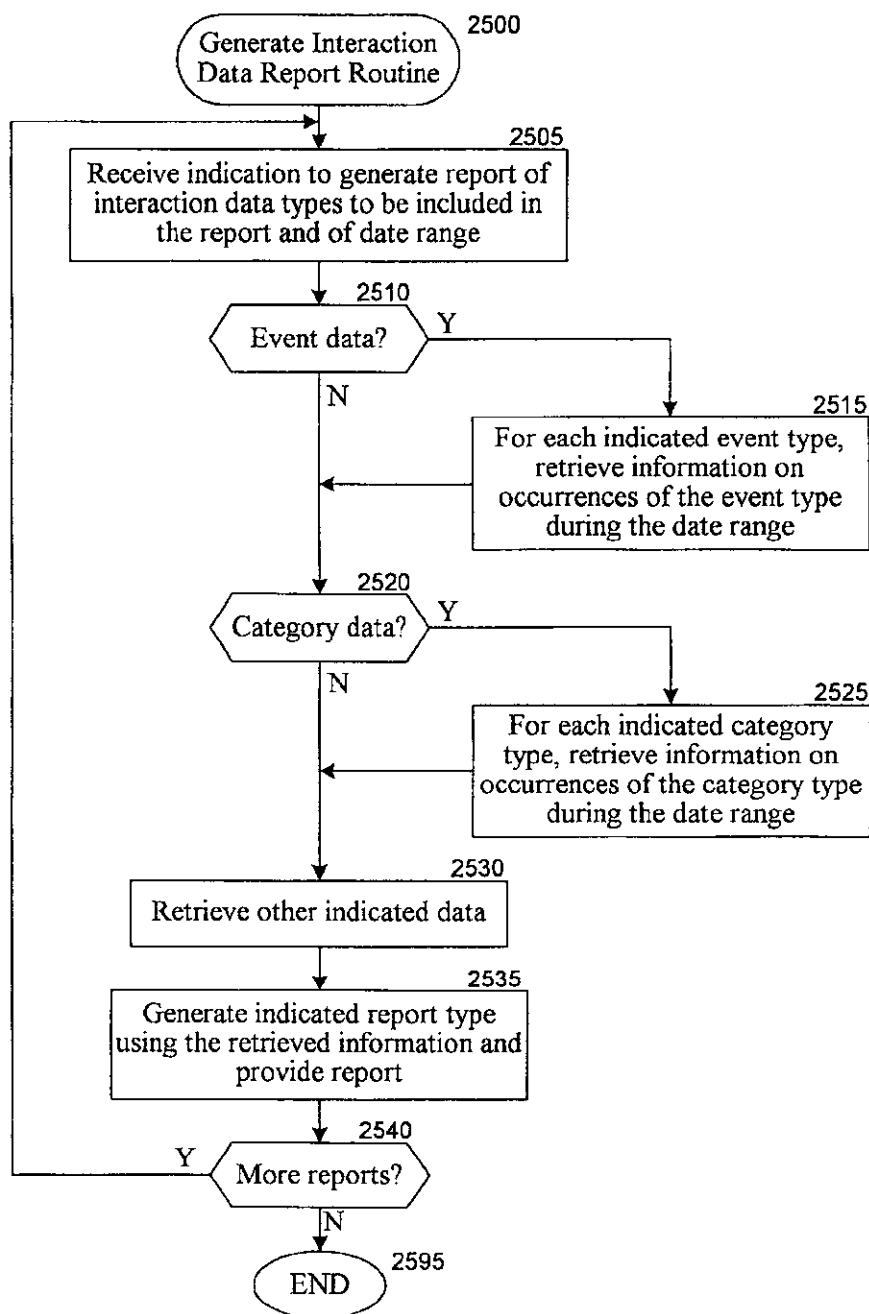
Fig. 24

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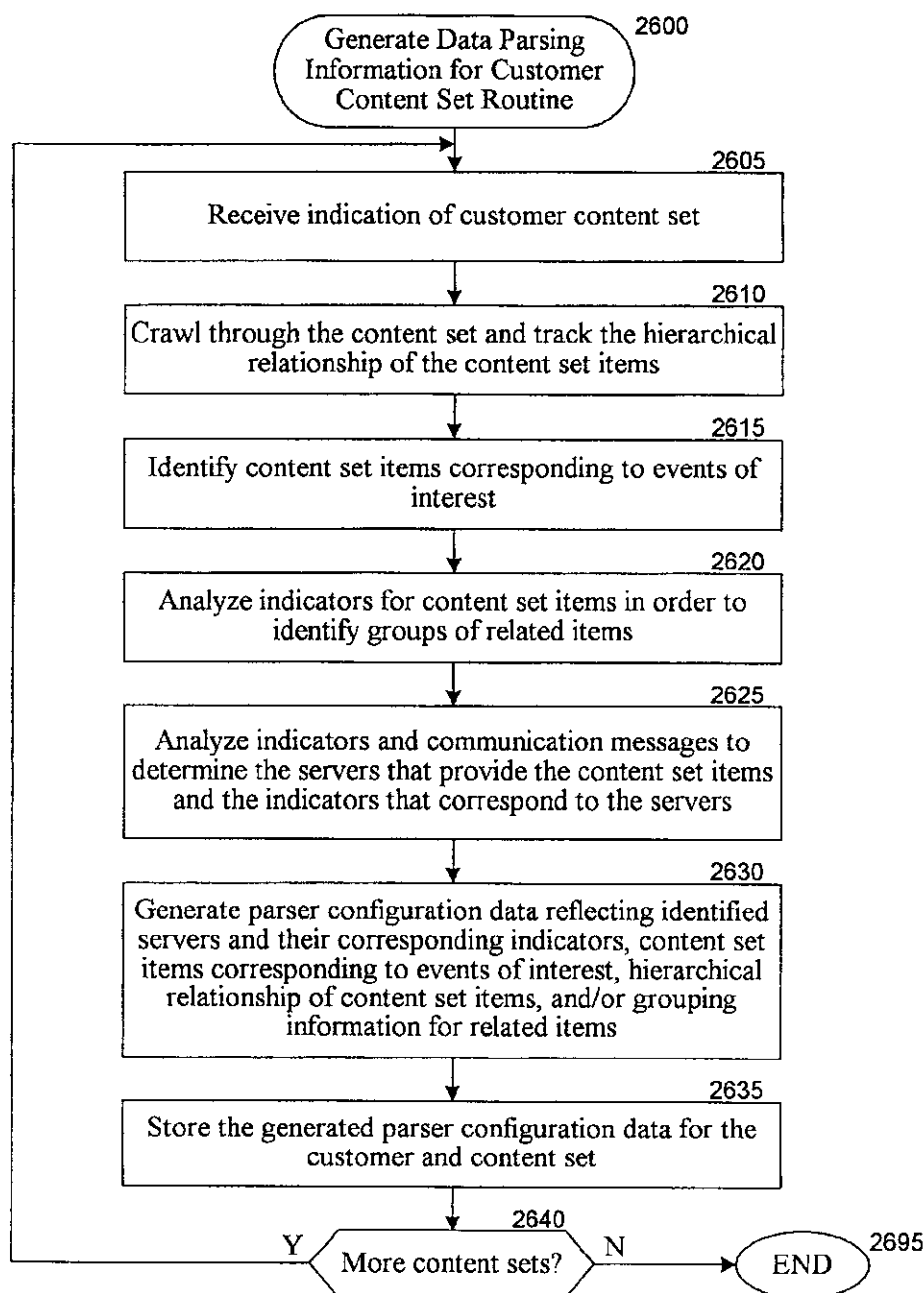
*Fig. 25*

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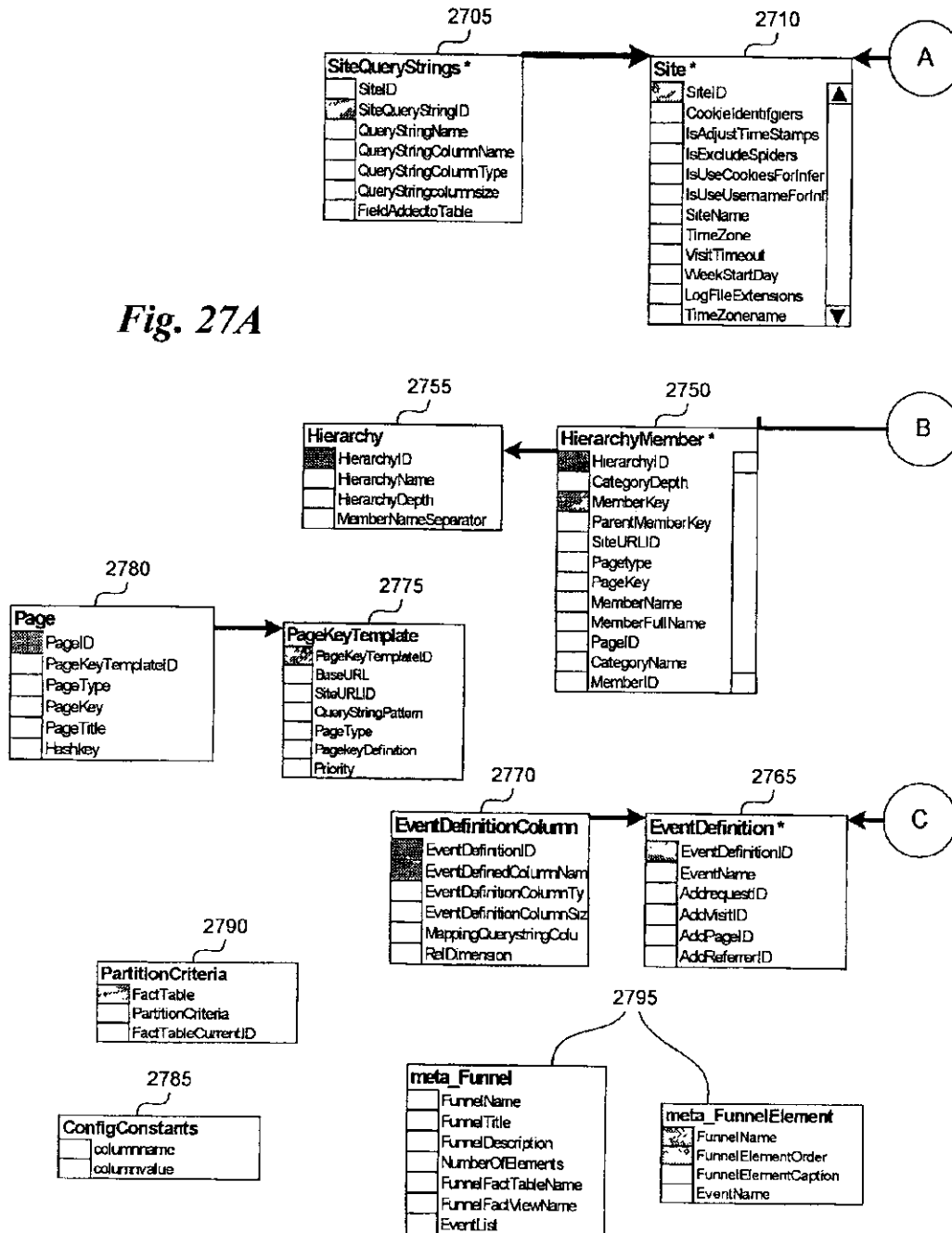
**Fig. 26**

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